DECEMBER • 1953

AMERICAN Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

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- Is 3-D Dead . . . ?
- Paramount's New Double-Frame Camera
- Electronic Recording Of Pictures On Tape

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THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY
PUBLICATION OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS

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ON THE COVER

"WHITE CHRISTMAS," current Paramount production is first to be made with studio's new "Lazy-8" double-frame wide-screen camera, pictured here in front of director of photography Loyal Griggs, ASC. Others are (l. to r.) Danny Kaye, director Michael Curtiz (seated) and Bing Crosby. Story about the camera begins on page 588 of this issue.
—*Photo by Jack Koffman.*

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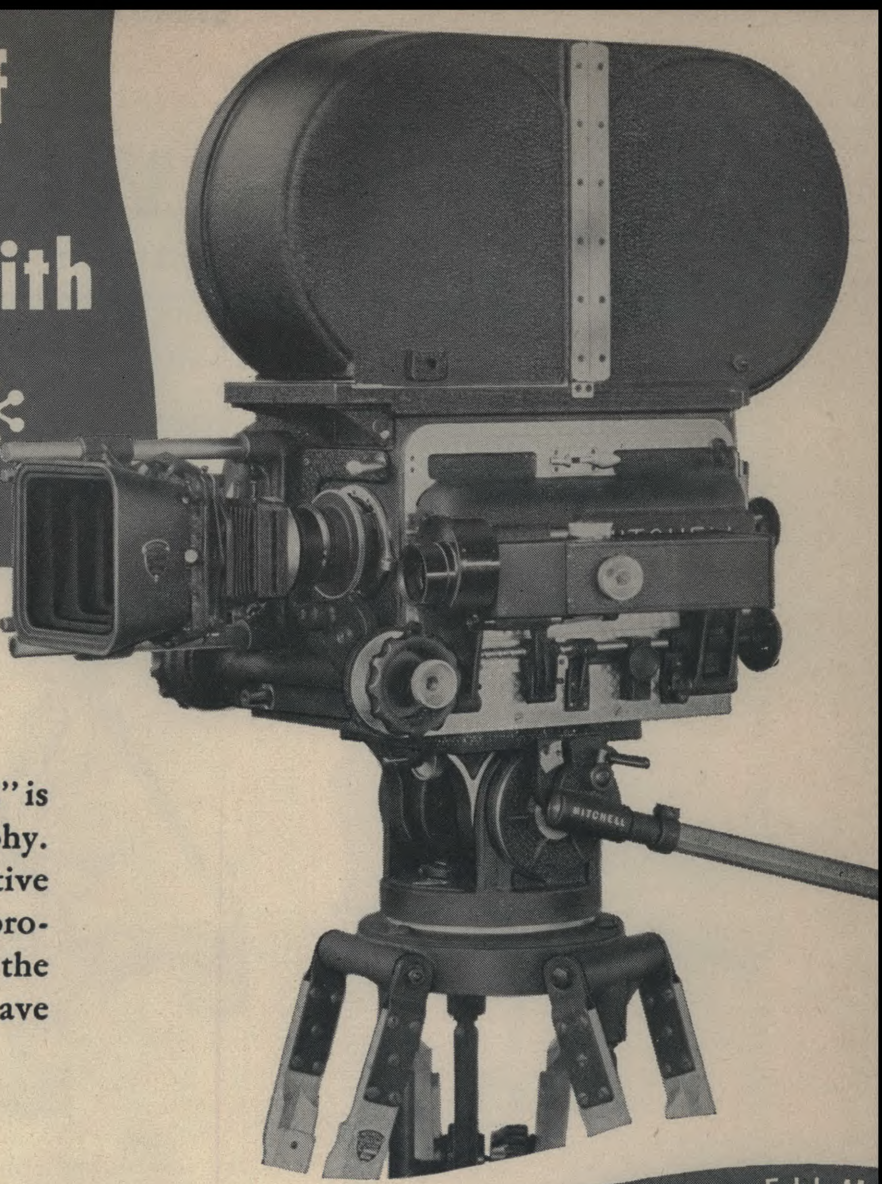
The great films of Today are shot with a Mitchell*



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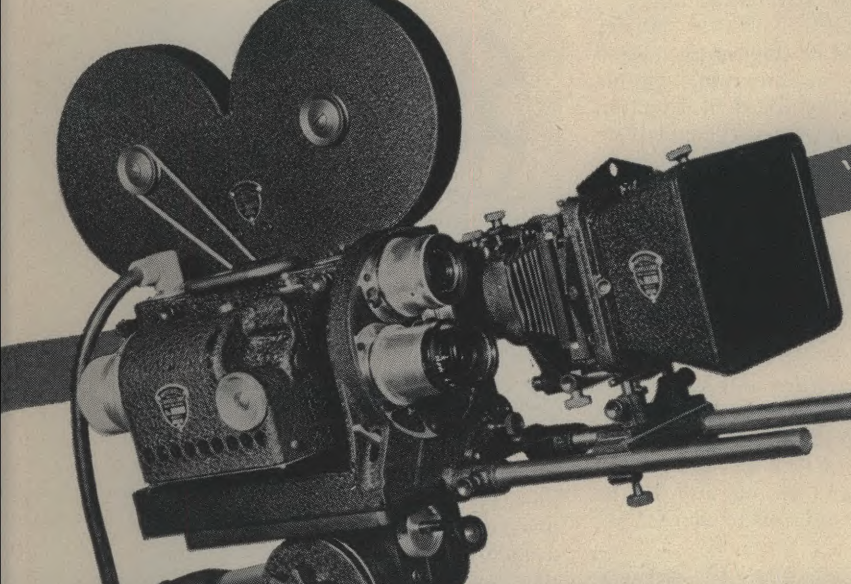

The MITCHELL "16" is enthusiastically acclaimed by leading commercial producers as the first professional camera to bring theatre-like quality to the 16 mm screen. Typically MITCHELL in design and workmanship, it contains the same proven features that made MITCHELL cameras famous throughout the world.

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WHAT'S NEW

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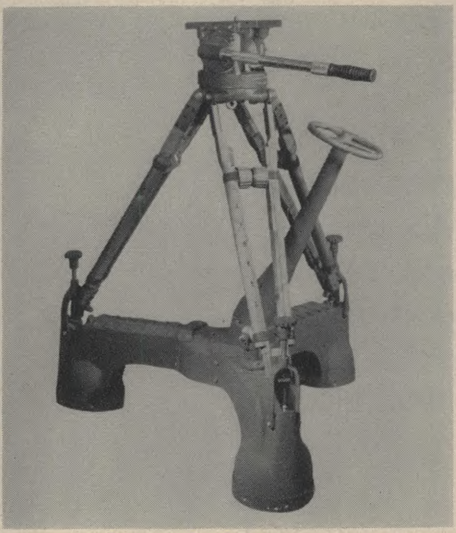
All-directional Dolly—Ceco Distributing Corp., 1600 Broadway, New York City, announces a new lightweight all-directional camera dolly. Tradenamed the "Spider," it is especially recommended for mobile TV units and small TV operations. The Spider dolly does away with the heavy post or elevator for lowering or raising camera, and uses the conventional tripod, mounted on dolly as shown in illustration.



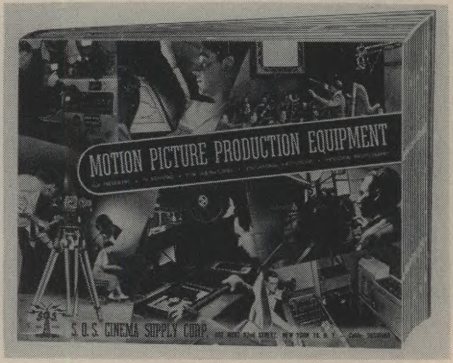
One man operates both the camera and the dolly. After mounting tripod and camera on dolly, cameraman points the arrow on steering wheel in direction he wants to move, and swiftly maneuvers into the desired position. Price of dolly is $650.00.

New S.O.S. Catalog—S.O.S Cinema Supply Corp., New York City, known as "The Department Store of theMotion Picture Industry," announces its latest catalog listing more than 1000 different items of motion picture and laboratory equipment.

Entitled *Sturelab No. 10*, the new catalog commemorates 28th anniversary of the S.O.S. organization, and is the largest and most comprehensive of company's history.

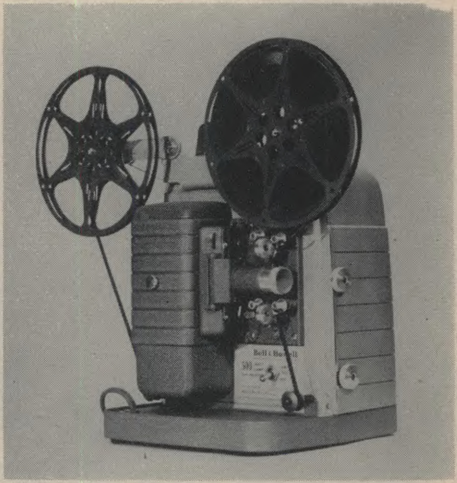
Contents, divided into 12 sections, lists 35mm studio and newsreel cameras; camera accessories and lenses; film studio and video lighting equipment; optical, magnetic and disc recording equipment; projection equipment; editing and cutting equipment; laboratory equipment; plus a host of others.

Free copies of catalog Sturelab No. 10 may be had by any qualified company or individual in the motion picture or TV profession by writing S.O.S. Cinema Supply Corp., 602 West 52nd St., New York 19, N. Y., and mentioning *American Cinematographer*.

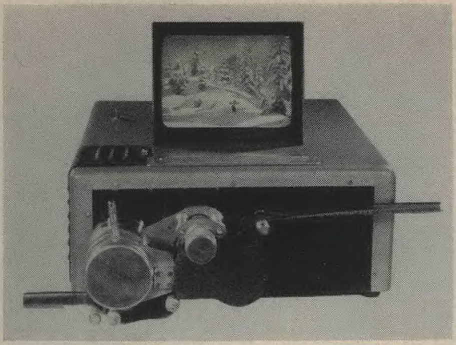

MOTION PICTURE PRODUCTION EQUIPMENT
S.O.S. CINEMA SUPPLY CORP.

Low-priced 8mm Projector—Bell & Howell Co., Chicago, Ill., announces a new version of its low priced model 253 8mm projector. Except for the color and the structure of its case, new projector is similar to company's model 221.

Noteworthy features include swing-out gate for easy film threading, and a single switch which controls lamp, motor and rewind. Reel arms hold 400 foot reels, and rewinding is accomplished without switching reels. Film scratching is eliminated by unique design which makes it impossible for metal parts to touch picture area of film. Price is $114.95 including Federal excise tax.



Film Viewer—Camera Equipment Co., 1600 Broadway, New York City, announces it is distributing a new foreign-made film viewer. The professional viewer is available in two models—one



for 35mm and another for 16mm. Viewer projects image on a large picture screen. Portable and easy to thread, special film path protects against scratching film. Price of 35mm model is $450; the 16mm model is priced at $425.00. For more descriptive data please write to the company, mentioning *American Cinematographer*.

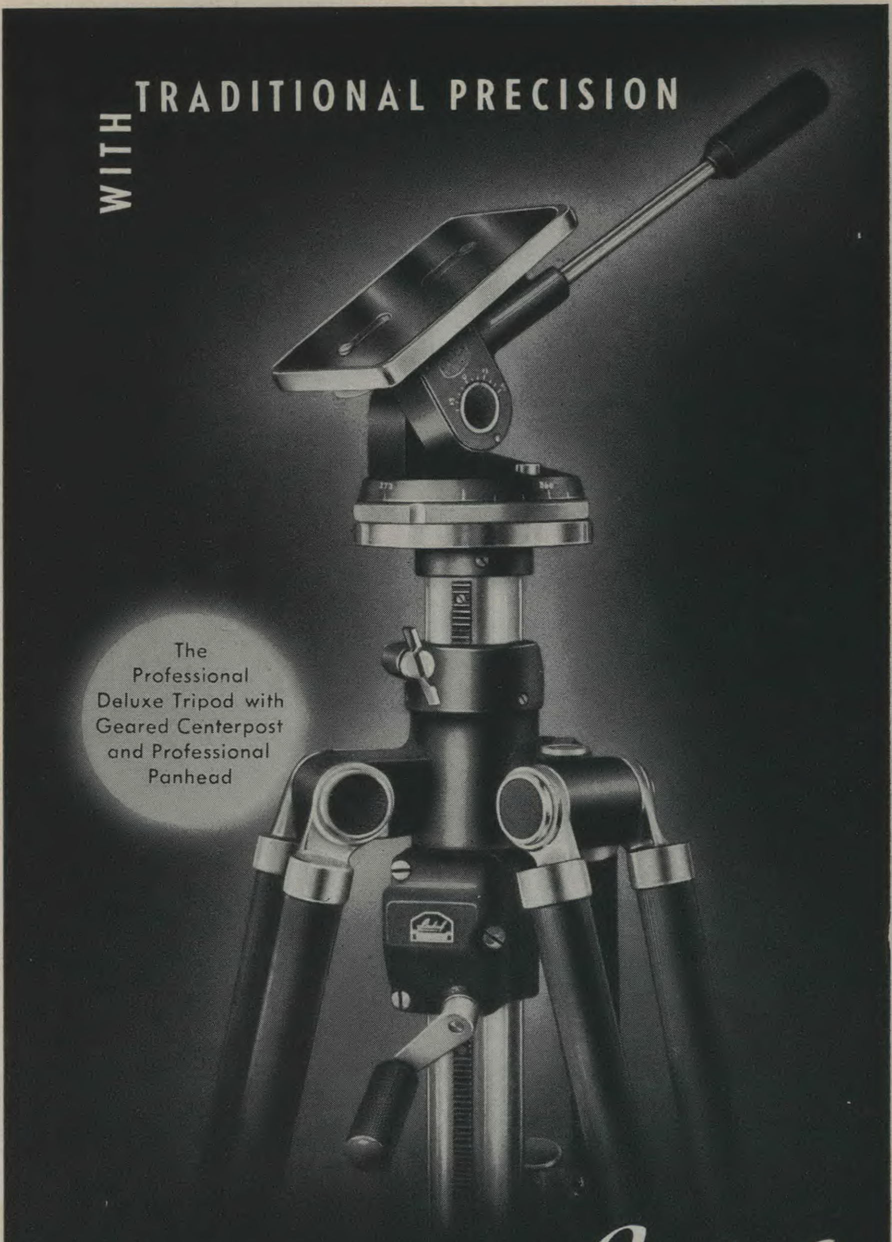
Arriflex Repairs—The Camera Mart, Inc., 1845 Broadway, New York City, offers complete repair service for Arriflex cameras, for which they are also distributors. Company carries complete stock of parts for both the 16mm and 35mm models and offers quick "same day" service on parts, etc., for out of town customers.

The Camera Mart recently opened a complete fully-equipped machine shop where the company's line of Camart motion picture and TV equipment is manufactured. Included are facilities for prompt service in camera repairs of all kinds, mounting of lenses, T-stop calibration, etc. Further details may be had by writing the company and mentioning *American Cinematographer*.

Title Letters—Grace Letter Co., 5 East 47th St., New York 17, N. Y., offers a new series of European-made cut-out letters for both amateur and professional movie titles. Letters are available in a wide variety of styles and in sizes ranging from 3/16″ in height to 4″. Letters are cleanly cut from cork composition material and are ready-gummed on the back for easy application to any surface.

Competitively priced, the letters are available in lots of 10 to 25 of each character in standard sets of 300 assorted, all in partitioned boxes. Further information and prices, plus a sample packet may be had by writing the company and mentioning *American Cinematographer*.

B&H Pro Equipment—Bell & Howell Co., Chicago, Ill., announces stepped up production on all professional studio and lab equipment and states company now can make immediate delivery on all items.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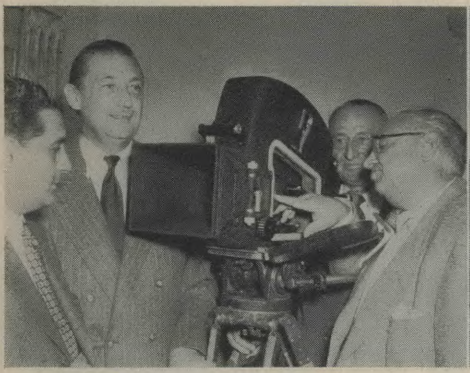
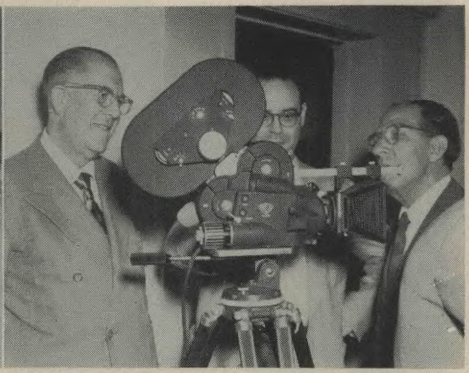
ASC's NOVEMBER monthly meeting was second in a series devoted to study of TV films. Guests included Hal Roach, Jr., (above left) who predicted many new assignments for cinematographers in TV film making because of new shows now in planning stage. Jack Chertok (center photo), producer of "Private Secretary" video films, emphasized importance of cinematographers with imagination in making TV films. Another guest was Charlie Farrell of "My Little Margie" series, shown above with Walter Strenge, ASC.



AMONG noted guests at ASC meeting was Robt. Richter (2nd from left above), of Arnold & Richter, Germany, manufacturers of the Arriflex camera. Looking over the new, blimped 35mm Arriflex (l to r) are R. D. Pestonji, Bangkok, Siam; Richter; John Boyle, ASC; and Karl Freund, ASC.



INSPECTING the Arriflex 16mm camera are (l to r) Paul Eagler, ASC; Richard Halpert of Kling Photo Corp., Arriflex camera distributor; and Arthur Miller, ASC. Of special interest was the new 200 foot film magazine which is now available for the 16mm Arriflex camera.

CHARLES G. CLARKE, ASC, addressed the Cinema class of the University of California at Los Angeles last month on the subject of 3-D and CinemaScope photography. Clarke, who has been on assignment in Europe for 20th Century-Fox the past several months, returned to Hollywood latter part of November.

•

F. C. FUHRMANN is new camera department head at Warner Brothers studios in Burbank, succeeding Mike McGreal. Clarence Schwiebert is his assistant.

•

THOMAS TUTWILER, ASC, is in Japan photographing the first production phase of Paramount's "Bridges of Toko Ri." Company is scheduled to return to Hollywood before the Holidays to shoot interiors at the studio.

•

JOHN ARNOLD, ASC, MGM's executive director of photography, working with Technicolor engineers, has come up with a method of shooting CinemaScope with Technicolor 3-strip cameras—heretofore not feasible. The negative result is said to excell that obtained when shooting C-Scope with other cameras or with other color film.

•

ASC MEMBERS are still talking about the special "Dragnet" TV film production which Jack Webb turned out for the ASC meeting in October. Using clips from several "Dragnet" films, special scenes were shot and integrated with this footage which featured Webb's cameraman, Edward Colman, ASC.

•

KARL FREUND, ASC, director of photography for Desilu Productions ("I Love Lucy," "Our Miss Brooks") was hospitalized with pneumonia early last month. Taking over his chore temporarily on the "Lucy" show was Nick Musuraca, ASC; while Robert deGrasse, ASC, substituted for Freund on the "Miss Brooks" show. Freund, thanks to the wonders of penicillin, made a quick recovery and returned to the Desilu sound stage December 3rd.

•

BRAZIL film industry is now giving annual awards, similar to the Academy "Oscars" awarded annually in Hollywood, according to Brazilian cinematographer I. Rozemberg, shown here with "Oscar" awarded him for best documentary made in South America in 1952.

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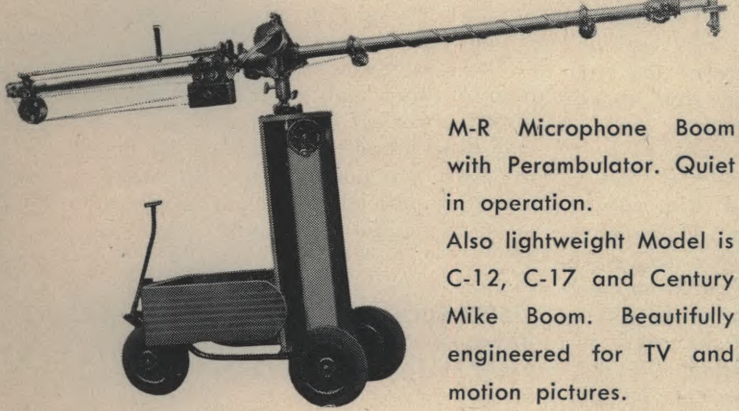

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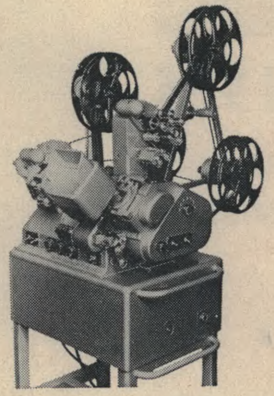

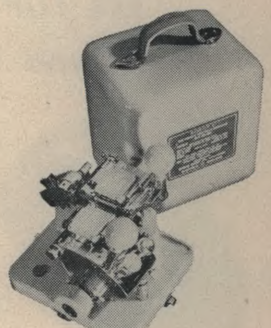

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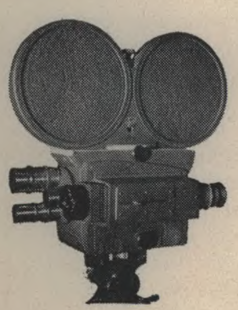

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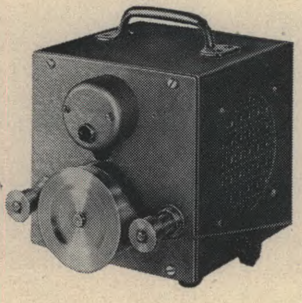

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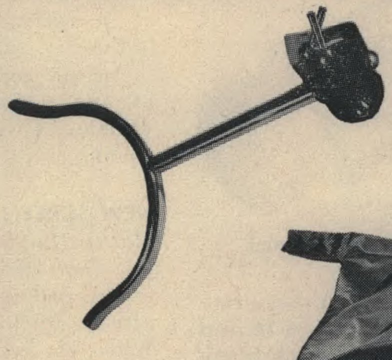

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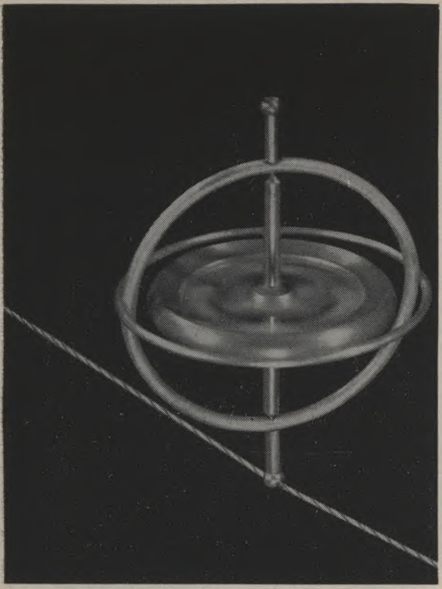

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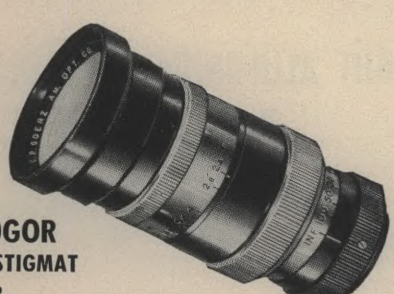

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BOOKS *you'll want to read . . .*

FILM AND THE DIRECTOR—*By Don Livingston. Published by Macmillan, New York; $4.50.*

This is a thoroughly professional director's guide, outlining the principles and techniques that are essential for successful movie making on any budget.

The author begins with the basic rules for good picture composition and the all-important techniques for smooth continuity, showing how easily inexpertness in either composition or continuity can ruin a picture.

He explains the possibilities and limitations of photographic and sound equipment, different types of staging, movement, lighting, etc.; and suggests ways of making the best, most economical use of each. He discusses the vital differences between stage and movie acting, the problems of movie casting and the use of amateurs.

Each step in professional movie making is clearly defined, with special attention given to editing and the ways in which the good director can make this important phase of film making.

The particular problems of the different types of movies are discussed, including those for television, the new 3-dimensional films, documentaries and educational and special films.

Emphasis is also given to the interlocking roles of all concerned in a production. The author shows how coordination and balancing of the varied skills can eliminate unnecessary expense without any sacrifice of artistic value.

An outstanding feature is the wealth of instructive and diagrammatic illustrations.

Anyone aspiring to or already working in motion pictures can gain invaluable advice and ideas from this volume.

•

NEW SCREEN TECHNIQUES—*Edited by Martin Quigley, Jr. Published by Quigley Publishing Co., New York; $4.50.*

This volume is a compilation of 26 articles by leading authorities on 3-D, Wide Screen, CinemaScope, stereophonic sound and other new screen processes in motion pictures. It is a clear, concise, profusely illustrated guide for anyone interested, professionally or otherwise, in the new methods of motion picture production and projection.

It is interesting to note that these methods are old in their origin and were thoroughly understood, in the main, decades ago. However, the methods have only recently been rather violently "sparked" into vigorous life by commendable pioneering demonstrations offered to the public.

The revolution in the film industry brought about by these new technological developments is explained in a preface by the well-known authority, Dr. Alfred N. Goldsmith, and an introduction by Martin Quigley, Jr., editor of Motion Picture Herald.

The principles, methods and procedures involved are examined in detail by the technicians who were instrumental in bringing them to practical theatre use, and by the executives who are now engaged in adapting them to regular motion picture exhibition.

These art forms, if they are to reach their fruition and general acceptance, must be worked out correctly in detail and then broadly crystallized in their practices, it is pointed out. This book is a factual, judicial, and impartial presentation of a new and rapidly changing art.

•

STEREOSCOPIC TRANSMISSION — *By Raymond and Nigel Spottiswoode. Published by University of California Press, Berkeley, Calif.; $6.00.*

This is the first book to deal exclusively with 3-D motion pictures. It is a fundamental treatment of the subject, for, as the authors explain in their introduction, "Underlying all systems of image separation there must be a transmission theory accounting for every modification in the shape and position of an object as it is photographically recorded, printed, and finally viewed by the spectator." That theory is given in this book, accompanied by many practical examples showing how actual 3-D can be most effectively photographed and projected.

The book analyzes the transmission of the image from scene to screen, discusses production problems as they are encountered, and aspects of camera and projector design, and shows how the image which is optically transmitted may differ from that which is actually perceived by the audience.

The vague concepts which have been bandied about in recent discussion are in this book replaced by a set of precise and concrete ideas, all of them geared to practical production techniques. The authors show how, by altering constants in the transmission system, an object of known size can be

(*Continued on Page* 580)

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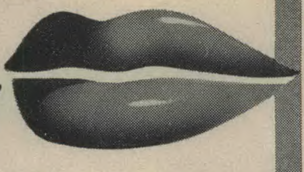

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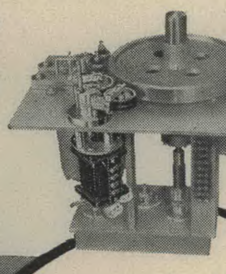

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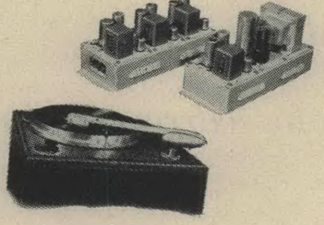

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BOOKS

(*Continued from Page* 578)

made to appear simultaneously in front of and behind another object. They examine the possibilities of quite new types of set design for the 3-D medium; they explain how this medium, especially when applied to the cartoon film, enables the nearness of things to be altered in relation to reality by bringing perspective, light and shade, and the apprehension of stereophonic depth into vivid conflict with one another.

•

TELEVISION BROADCASTING — *By Howard A. Chinn. Published by McGraw-Hill Co., New York; $10.00.*

Here is a comprehensive, practical guide to the technical aspects of television broadcasting. It gives a view of the equipment, systems, and facilities of the broadcasting station, in studio or field, and authoritative information on the good engineering practices and techniques of operating them.

The book shows television broadcasting fundamentals plainly, then gives a wealth of technical information on cameras, lighting, projectors, pictures and sound recording, transmitters and antennas, etc., plus details of their operation. Also shown are the facilities and techniques of field pickups, intercity program transmission, studio planning, equipment installation practices, and other technical phases of effective television broadcasting.

This volume can be used as a reference by readers already in television and for practical self-training by radio engineering and operating personnel interested in the TV broadcasting field.

•

PRINCIPLES OF CINEMATOGRAPHY— *By Leslie J. Wheeler. Published by Fountain Press, London; American Agents: Rayelle Foreign Trade Service, New York; $10.95.*

This work is essentially directed to the practical cinematographer and should be invaluable to all who are connected with the motion picture industry. It is unique in that it bridges the gap between highly academic treatises and the popular concepts of "movie making" in such a manner that it provides a very great deal of hitherto unpublished information in a most understandable form.

All the processes and equipment used in present-day motion picture production and exhibition are explained in detail and the book is so arranged as to include a short history of each main aspect of the Industry as it occurs in the logical sequence of film production.

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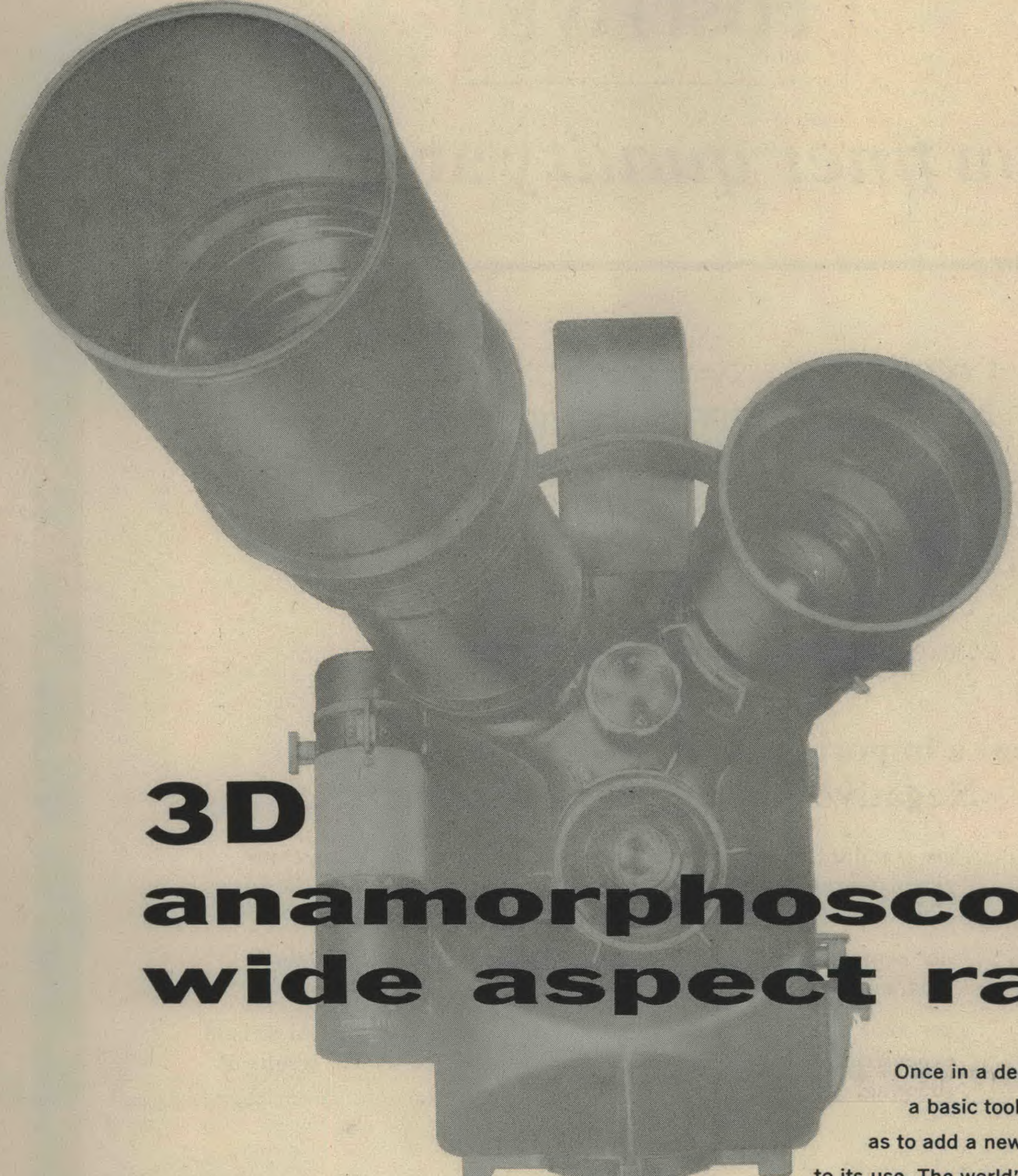

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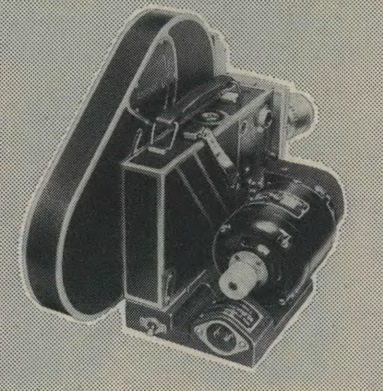

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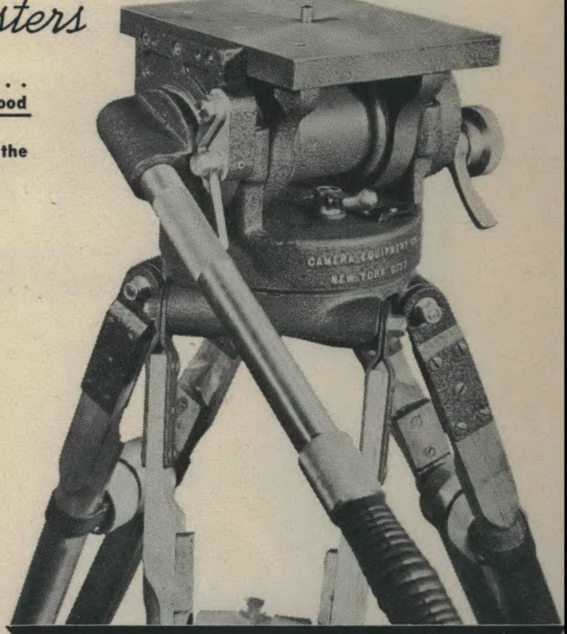

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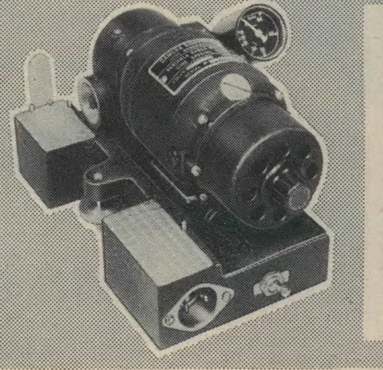

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Is 3–D Dead . . . ?

You may not like 3-D, but lots of people do. Whether it will retain its popularity depends on what is done to alleviate eye discomfort of theatre patrons.

A SURVEY BY THE EDITORS

BIGGEST QUESTION in the motion picture business today is, "What is the status of 3-D?" Is 3-D on the way out? Is 3-D actually *dead?* If so, why?

To get the answers, American Cinematographer's editors undertook a study recently of the problems that have brought about an apparent slacking off of enthusiasm for 3-D among producers, exhibitors and the public. More recently the editors conducted a survey, the purpose of which was to learn if possible what the future holds for 3-D motion pictures.

It is apparent from these studies that Hollywood—and the exhibitors and the public, for that matter—never really gave 3-D a chance.

First, too many Hollywood producers jumped into 3-D film production before they knew technically what it was all about. The first 3-D feature films were put on the screen before the theatres were properly prepared for showing three-dimensional motion pictures. The result was immediate adverse reaction by a great many theatre-goers, most of whom blamed the viewing spectacles they were obliged to wear to see the pictures. Actually, defective glasses were only a minor part of the trouble. Contributing more directly to the viewer's personal discomfort was technically bad photography in some instances, out-of-sync projection, insufficient projection light, and inefficient 3-D screens. Most projectionists in the beginning were totally uninformed on

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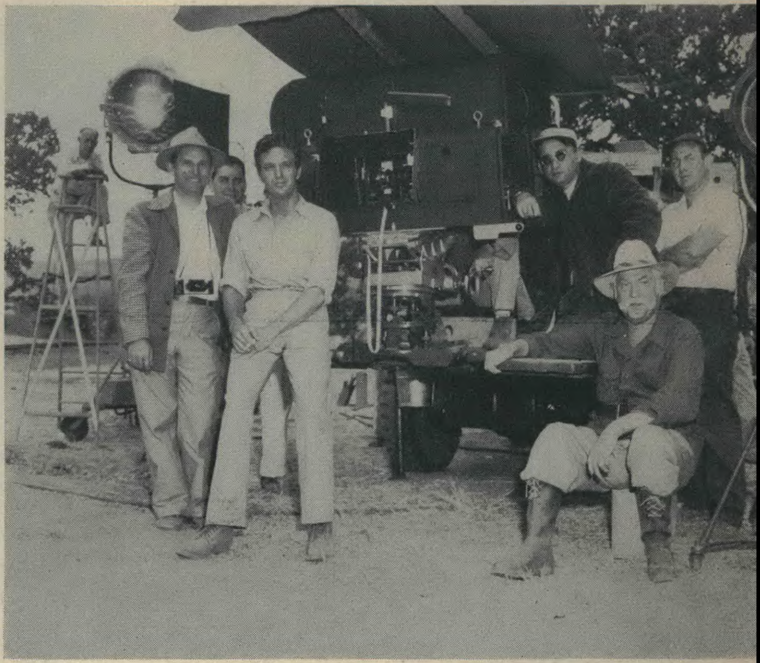

FIG. 1—The gang that started it all! Arch Oboler (dark glasses) directed and Joseph Biroc, ASC (left foreground), photographed "Bwana Devil" in the summer of 1952 with a Natural Vision 3-D camera. This was Hollywood's initial 3-D feature production which started the present vogue for sterescopic movies.

FIG. 3—No viewer discomfort here! Businessmen watch a 3-D promotional film in 16mm color unfold on screen at recent meeting of Los Angeles Advertising Club. Film was produced by Raphael G. Wolff Studios, Hollywood, which sees big future for 3-D in 16mm industrial, training and educational films.

FIG. 2—Filming Wayne-Fellow's "Hondo" in 3-D in the wilds of Northern Mexico. The Warner Brothers all-purpose camera is mounted on front of heavy-duty mobile carrier and was used thus in shooting most of the picture on location. "Hondo" is rated by many as the production destined to return 3-D to popularity.

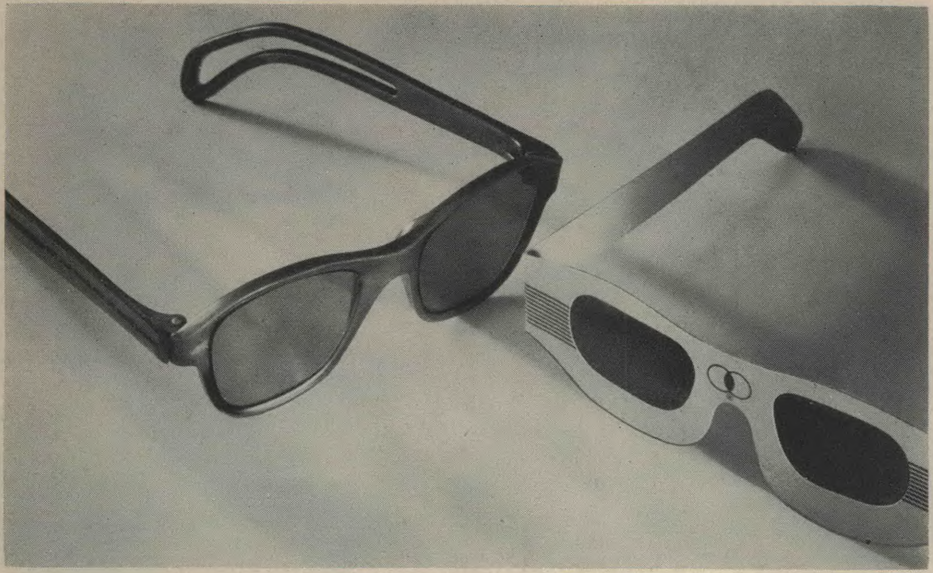

FIG. 4—Two types of pola viewers for 3-D films. Early type viewer on right proved source of annoyance to wearers because of small lens area and cardboard frames which wouldn't stay in place. Ideal pola viewer is shown at left, has larger lenses and comfortable plastic frame. Polaroid has since brought out improved reinforced cardboard viewer.

the requirements for good 3-D projection.

Perhaps one of the biggest mistakes —and the one that has had the most to do with general public reaction against 3-D films—is the exhibitor's neglect to properly inform the public in the matter of using viewing spectacles. The first Polaroid viewing spectacles made available to the exhibitor for use by his patrons had several shortcomings, chief of which was the cardboard frame (Fig. 4). Generally these spectacles were handed out flat—that is, the temples or side members that hook over the ears were not folded, ready for use. The result was that the spectator fumbled with the glasses in the darkened theatre and bent the temples, but not sufficiently, with the result they continually slipped off the ears. Had the exhibitor, or more properly, the producer of 3-D features, prepared a short trailer—to be screened just prior to running the 3-D feature—instructing the spectator how to crease the temples of the viewing glasses and warning not to blur the lenses with fingermarks, a great deal of customer discomfort would have been eliminated and there would be greater enthusiasm for 3-D pictures today.

Long after these faults had done what appears to be irreparable damage, viewing glass manufacturers brought out spectacles of greatly improved design. The lens diameters were larger and the frames were reinforced with wire, so that they clung snugly to the head of the wearer. Polaroid Corporation's viewer of this type is now one of the best available; they have also brought out a clip-on type for use by those who normally wear eyeglasses when viewing motion pictures.

Perhaps the greatest annoyance next to the glasses was improper projection of 3-D films. In the beginning, theatres were hastily equipped to show the new type films and attention was chiefly given to installing a non-polarizing screen and the necessary mechanical equipment for operating the two projectors simultaneously and in sync. However this equipment didn't always keep the projectors in sync; there would often be as much as two or three frames difference in the position of the dual films, producing tremendous discomfort for the audience. Films out of sync as much as $\frac{3}{4}$ of a frame is sufficient to render annoying eye discomfort for the viewer.

Ultimately, Polaroid Corporation tackled this problem, as it did that of faulty viewers, with the result it de-

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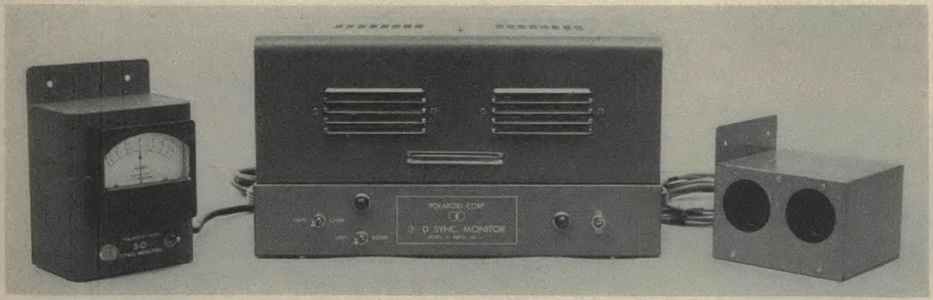

FIG. 5—Polaroid 3-D Electronic Sync Monitor, model 21, which automatically indicates any out-of-sync condition in 3-D projection of ¼ frame or more and enables projectionist to correct it. When theatres are thus equipped, comfortable viewing of 3-D films can be assured.

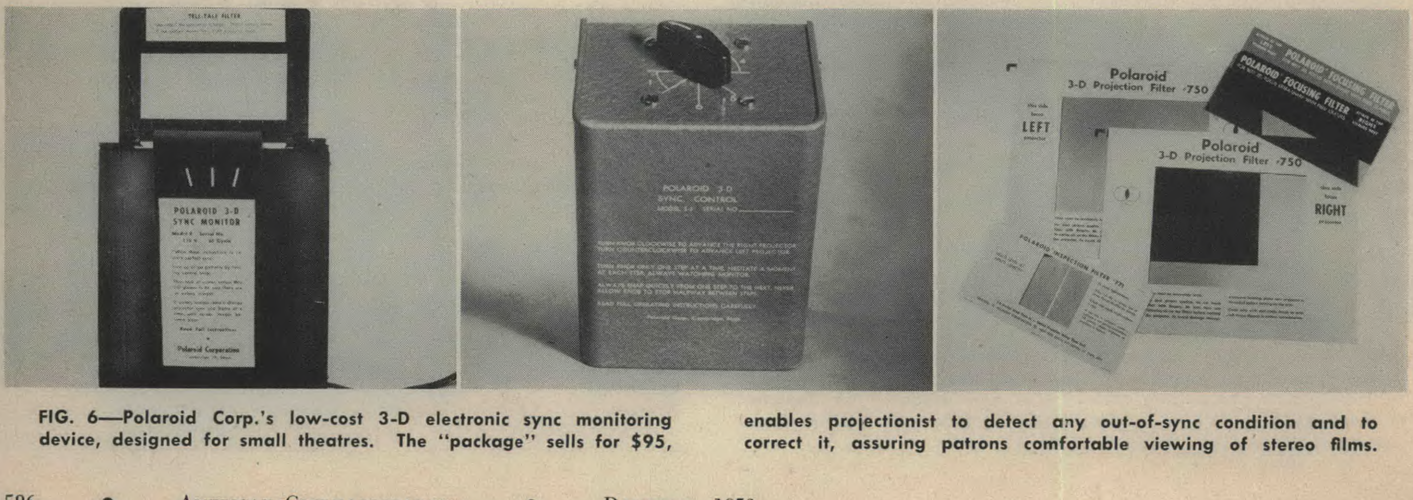
TELL-TALE FILTER
POLAROID 3-D SYNC MONITOR
Polaroid Corporation
POLAROID 3-D SYNC CONTROL
Polaroid 3-D Projection Filter ·750
LEFT
Polaroid 3-D Projection Filter ·750
RIGHT
POLAROID FOCUSING FILTER
POLAROID INSPECTION FILTER

FIG. 6—Polaroid Corp.'s low-cost 3-D electronic sync monitoring device, designed for small theatres. The "package" sells for $95, enables projectionist to detect any out-of-sync condition and to correct it, assuring patrons comfortable viewing of stereo films.

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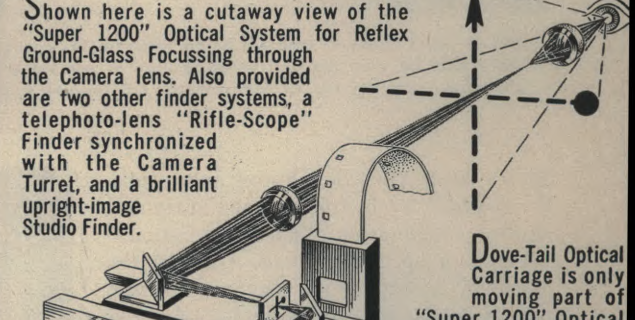
Auricon Hollywood

Shown here is a cutaway view of the "Super 1200" Optical System for Reflex Ground-Glass Focussing through the Camera lens. Also provided are two other finder systems, a telephoto-lens "Rifle-Scope" Finder synchronized with the Camera Turret, and a brilliant upright-image Studio Finder.



Dove-Tail Optical Carriage is only moving part of "Super 1200" Optical System. There is no camera-weight shift on tripod when moving from focus to film-shooting position.

"Super 1200" Camera casing, film gate and shooting lenses are solidly precision-mounted with relation to each other, and do not shift to focus or shoot.

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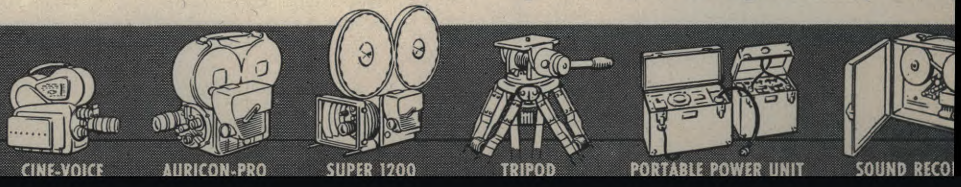


Paramount's "Lazy-8" Double-Frame Camera

35mm negative travels horizontally in this unique camera having double-frame aperture and said to render wide-screen pictures having greatly improved resolution.

By JOHN R. BISHOP, A.S.C., and LOREN L. RYDER, A.S.C.

As Told to Arthur E. Gavin

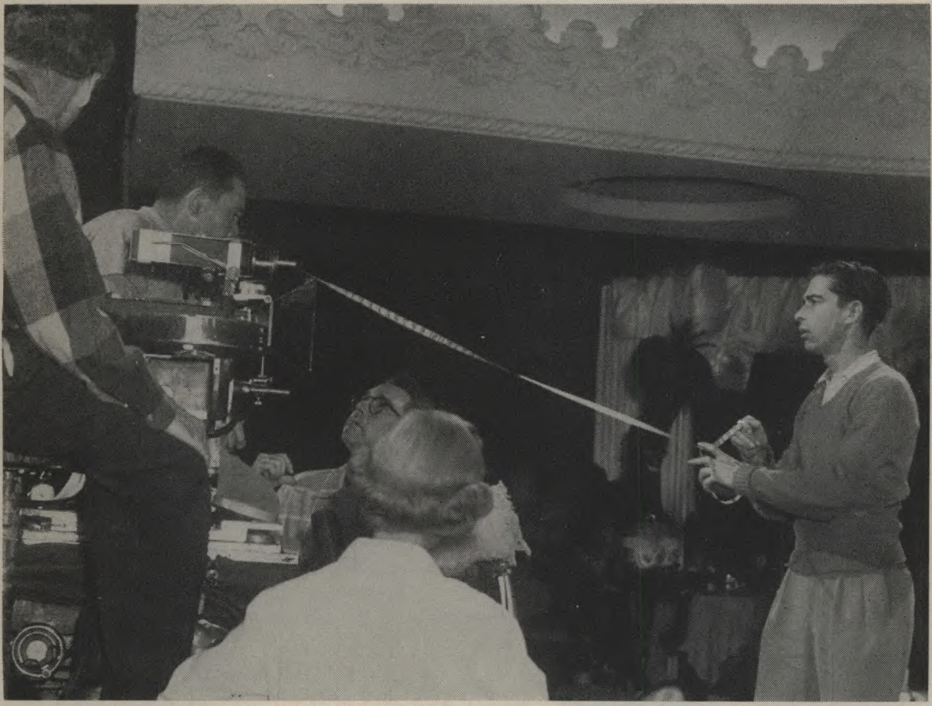


FIG. 1—The "Lazy-8" camera being lined up for a shot for Paramount's "White Christmas." Here may be seen the horizontal position of camera with film magazines lying on side and the viewfinder on top of the camera. On normal sound takes, a blimp is used.

THE WIDE SCREEN photographic procedure now being used at Paramount studios in shooting "White Christmas" involves a special camera. Dubbed the "Lazy-8" by studio technicians, the film magazines lie on their side (See Figs. 1 and 2) and the film runs through the camera horizontally; each frame is eight sprocket holes in film length instead of the conventional four. All photography and special effects work on the above-named production utilize this camera and its horizontal-travelling double-frame negative. Paramount adopted this revolutionary new camera as a means of gaining increased picture width without losing any picture quality.

The "Lazy-8" filming system provides a wider picture area on the negative without involving the use of film wider than normal as for instance, 65mm and 70mm, which have been introduced in some wide-screen processes. The "Lazy-8" system utilizes standard 35mm negative. The negative image area, which is 1.472" x .997" is then optically printed in reduced size to standard 35mm positive in an operation which also turns the image 90°. Thus, in the release print, the picture or individual frame appears as shown in Fig. 5, on 35mm film which runs through the projector in the conventional vertical manner. All prints including dailies, studio copies and release prints are made to standard print size by this same process of photographic reduction. The negative size and placement are shown in Fig. 4.

There are several other features about Paramount's new "Lazy-8" photography that deserve careful attention. First, this is the only new procedure which supplies adequate room for good negative splicing. Also, it is the only new procedure that improves rather than degrades dissolves, fades and special photographic effects work. We use the double-frame negative for all effects work; thus any shortcomings or defects are diminished in the photographic reduction to the positive.

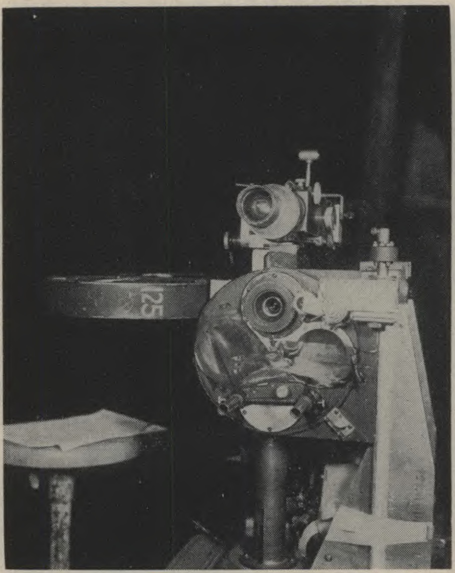


FIG. 2—Front view of the "Lazy-8" camera with blimp removed. Film travels horizontally before lens. Each frame is 8 sprocket holes in film length—equal to 2 standard frames.

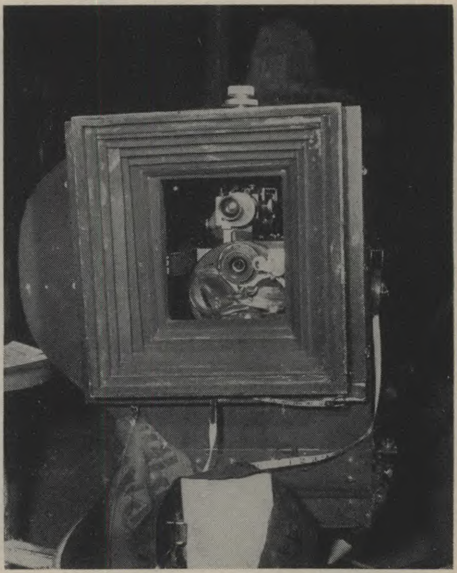


FIG. 3—Same camera encased in temporary blimp. New blimp is streamlined, more compact, and lighter in weight, adding to the operational ease of the camera.

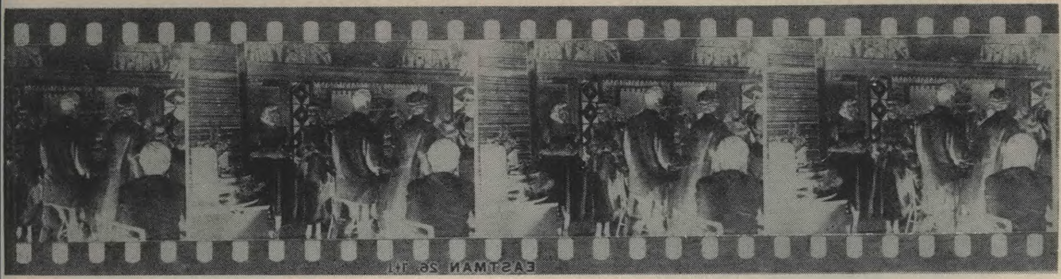


FIG. 4—Full size reproduction of the "Lazy-8" camera negative, showing negative size and placement. In the release print, the picture or individual frame appears as shown in Figure 5 at right.

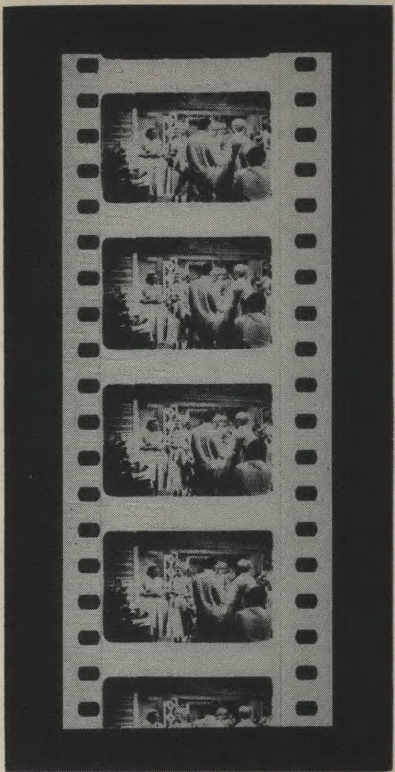


FIG. 5—Full size reproduction of 35mm release print made from the double-frame negative above, left. Latter is optically printed down to area shown, at same time turned 90°. Resultant print gives wide screen picture having greatly improved resolution.

It is well known that the limiting factor in all photographic work has been the area of the negative. In this new method, the effect grain has been reduced by a factor of 2.66:1. Actually, there are three factors that are affected, viz.: grain, resolution, and depth of field. Here the important accomplishment of Paramount's engineers, in addition to using the larger area of negative as compared to positive, is the compromise effected that permits use of as large an area of the negative as feasible without losing depth of field.

Normally, as one goes into the use of longer focal length lenses, there is a loss of depth of field. This is particularly true where 70mm film is used for negative, and where loss in depth of field detracts from the picture quality more than is gained otherwise.

The quality of the picture on the screen is determined by the width of the picture as long as spherical lenses are used. In general, if we increase the screen width by any factor and still want to retain maximum resolution, it becomes necessary to increase the resolution of the weakest link, so to speak; so if we have a 28 foot screen and we desire to increase its width to 45 feet and retain this resolution, the logical step is to follow the wide screen photographic procedure which Paramount has inaugurated with the "Lazy-8" camera.

There is a great tendency on the part of many people to confuse the artistic shape of pictures with the technique that one uses to gain the artistic shape. In the field of motion pictures, the primary effort, it seems to me, should be to determine what picture shape (aspect ratio) is best for general motion picture entertainment presentation. Having then determined this, the next problem is purely one of mechanics—a technical determination of the best way to produce the desired picture shape. Whereas there has been a tendency to exhibit pictures in an aspect ratio which is technically dictated, the

(Continued on Page 606)

JOHN R. BISHOP, head of Paramount Studio's camera and film processing departments who modified the old William Fox double-frame two-color camera, converting it to the present "Lazy-8" for Paramount wide-screen motion pictures.

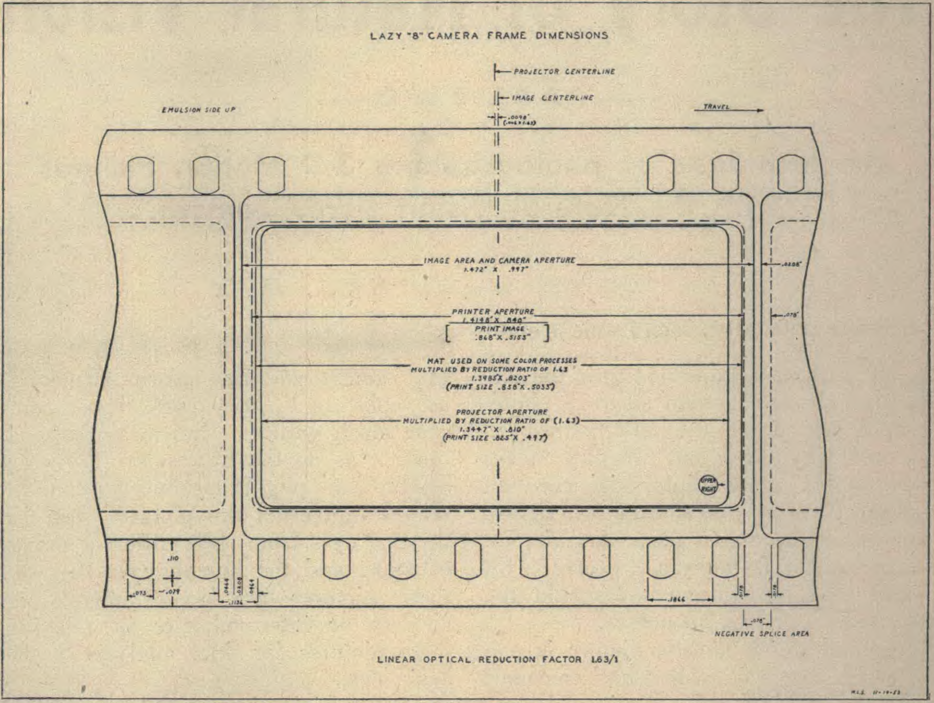
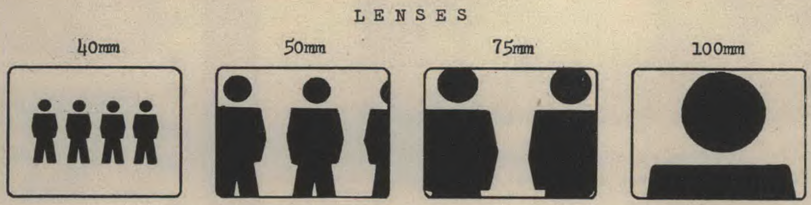
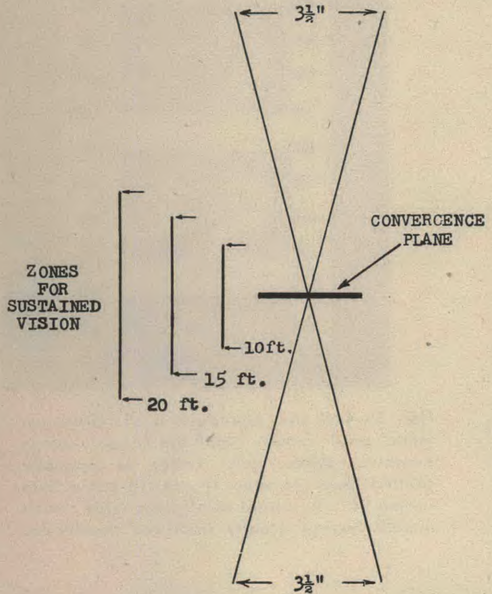


FIG 6—Schematic diagram of the "Lazy-8" film frame. Camera uses standard 35mm negative, which travels twice normal speed through camera. Relative dimensions of camera and projector apertures are shown.





THE CONVERGENCE PLANE is changed with the action of the scene. The matching medium and closeup shots are taken in the same planes using different focal length lenses.

The Story of Natural Vision

—PART TWO—

The technique of photographing 3-D Motion Pictures with the Natural Vision stereo camera.

BY JULIAN GUNZBURG, M.D.

LAST MONTH I explained how the Natural Vision system of 3-D photography was developed, and further explained why three and one-half inches was chosen as the interaxial constant for the Natural Vision cameras. Before presenting the actual technique of photographing 3-D motion pictures with Natural Vision equipment, I should like to present our basic concepts.

A good stereo motion picture is one in which stereo is evident and constant. Like the moving and changing picture, the stereo must also be dynamic. We think of the two cameras—the right-eye camera and the left-eye camera—as replacing the two eyes. These cameras must, within technical limitations, operate as do the human eyes.

The final picture produced upon the screen represents the pictures seen by the two eyes from their different points of view, and the human eyes that see these pictures are acting merely as viewers or intermediaries in relaying these pictures for final analysis to the brain eye.

Although the human eyes act as a viewer, we must understand how they work in motion picture viewing. Assuming that the two human eyes are matched in focal length, image size, color, muscle balance and absence of suppression, how do they work as viewers of a motion picture? Because the viewer is seated at least forty feet from the screen, the eyes act as though looking at infinity. In other words, the eyes are nearly at rest, with very little accommodation and convergence required. As stated before, only the central portion of the retina is used in viewing the picture. The eyes wander rapidly over the picture. The periphery of the retina sees only colorless forms and movement, and acts to direct the picture to the central visual field.

In viewing a stereo picture, the two eyes see their separate matching pictures, representing two different points of view.

In Natural Vision, the picture is taken as if the cameras were the human eyes, therefore the pictures are superimposed in the plane of convergence. In this plane fusional movements are not required of the viewing eyes, but as the eyes wander into the background or into the foreground, fusional movements are stimulated.

The foreground objects require bringing the visual axis together, or converging movements; and the background objects require bringing the visual axes away from each other, or diverging movements.

There is a tie between accommodation and convergence. Accommodation, or focusing, is stimulated by convergence and relaxed by divergence. Inasmuch as the screen is at a fixed distance from the viewer, accommodation must be constant, for if it is changed, the result will be a blurred picture.

This brings up the next consideration—the normal limitation of the converging and diverging movement, with accommodation fixed at optical infinity or without stimulating accommodation. After making literally thousands of tests, we adopted as one degree our limitation of background and foreground separations. There were to be certain exceptions, and these we shall bring out in the discussions to follow.

We were, of course, to allow no vertical separations. Technically speaking, the separation of the vertical lines was to be limited to one degree foreground and background, and no separation of the horizontal lines. This terminology became quite confusing, and so before long the practical and ingenious cameramen began calling the

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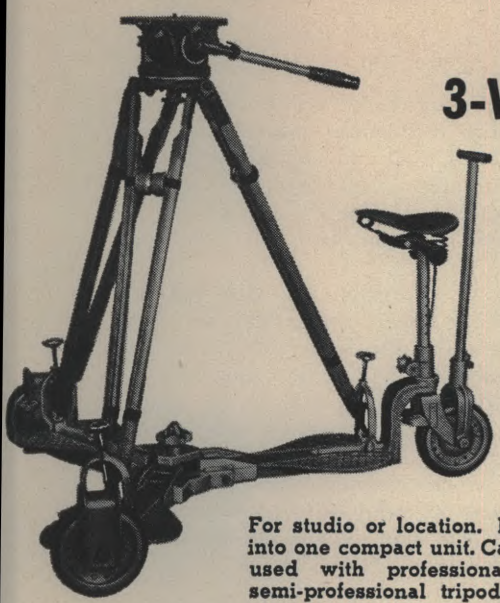

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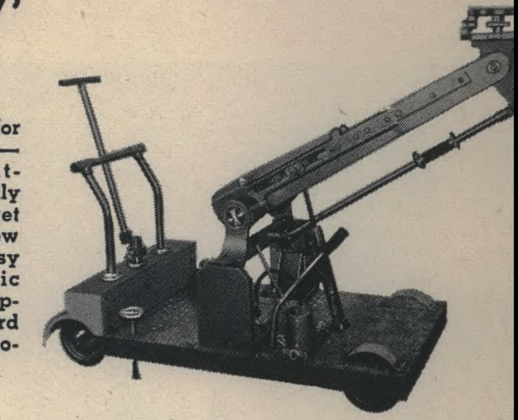

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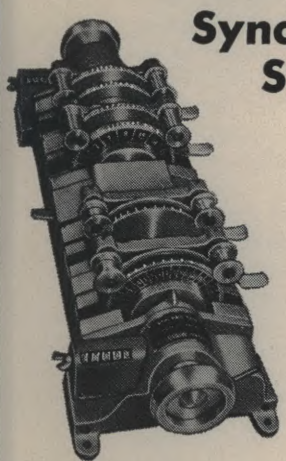

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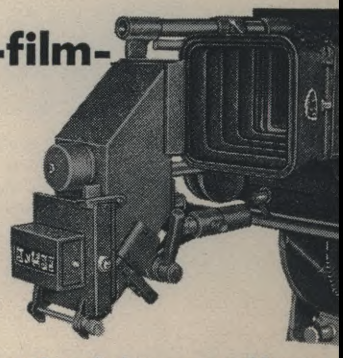

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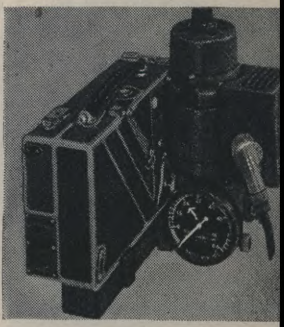

NATIONAL CINE EQUIPMENT Inc

JOHN CLEMENS ERWIN HARWOOD

MOST LIVE ACTION shots for the Carnation Milk commercials on the Burns and Allen Show are filmed on the same sets as used in the show. Here cinematographer Philip Tannura, ASC, (checkered shirt) discusses the commercial story-board with (left to right) Sandra Burns, Gracie Allen, and George Burns. At right, assistant cameraman Sam Rosen focuses the camera for the shot.

Better Photography Means More Productive Commercials

When the same studio that films the TV show also films the commercials, the commercials match the show in photographic quality, with greater selling impact resulting.

By AL SIMON

Associate Producer, "Burns and Allen" and "I Married Joan" TV Film Shows.

Several years ago at the request of an important sponsor, I had to threaten to fire a film editor who always sat silently through the running of the first trial composite, absorbed and interested in remedying the slightest defect in the program. When the commercial appeared, he began to smoke and talk and chat as many home viewers do—completely ignoring what was on the screen until the entertainment began again. "The show is important," was the film editor's explanation. "Who cares about the commercial?"

Well, sponsors do. Yet the most difficult problem in the transition from motion pictures to television was to convince film technicians used to feature productions that the most important three minutes of the average twenty-nine minutes and thirty seconds of a television program were the commercials.

First, to appreciate the vital importance of the filmed commercial, we must first recognize the basic difference between motion pictures and television—a fact which has been difficult for many motion picture personnel to understand. Although the feature film is designed purely as entertainment and, as such, it extracts an admission price from a patron, television is *not* an entertainment medium. Television is a sales medium designed to sell.

If, in order to gain an audience and to expose that audience to an advertising message, it is necessary to use entertainment, the sponsor does so but he is not primarily interested in making people laugh or cry. He wants to get their attention to sell, or to identify his product with a star, or to get the cumulative effect of a weekly association.

Yet, many sponsors today are committing an error more disastrous than the film editor who talked through the commercials. They are failing to take advantage of the photographic and production skills of Hollywood in preparing their sales messages.

I have watched a program in which a 16mm film made under bad lighting conditions was blown up to 35mm and

(Continued on Page 607)

IN RECOGNITION of the matched excellence in the photographic quality of both the Burns and Allen program and its Carnation Milk commercials, the American Society of Cinematographers last month presented its Award of Merit to cinematographer Philip Tannura (3rd from left). Others in photo are Arthur Edeson, ASC President; George Burns; director Frederick de Cordova; Gracie Allen, and Fred W. Jackman, Executive-Vice-President of the ASC.

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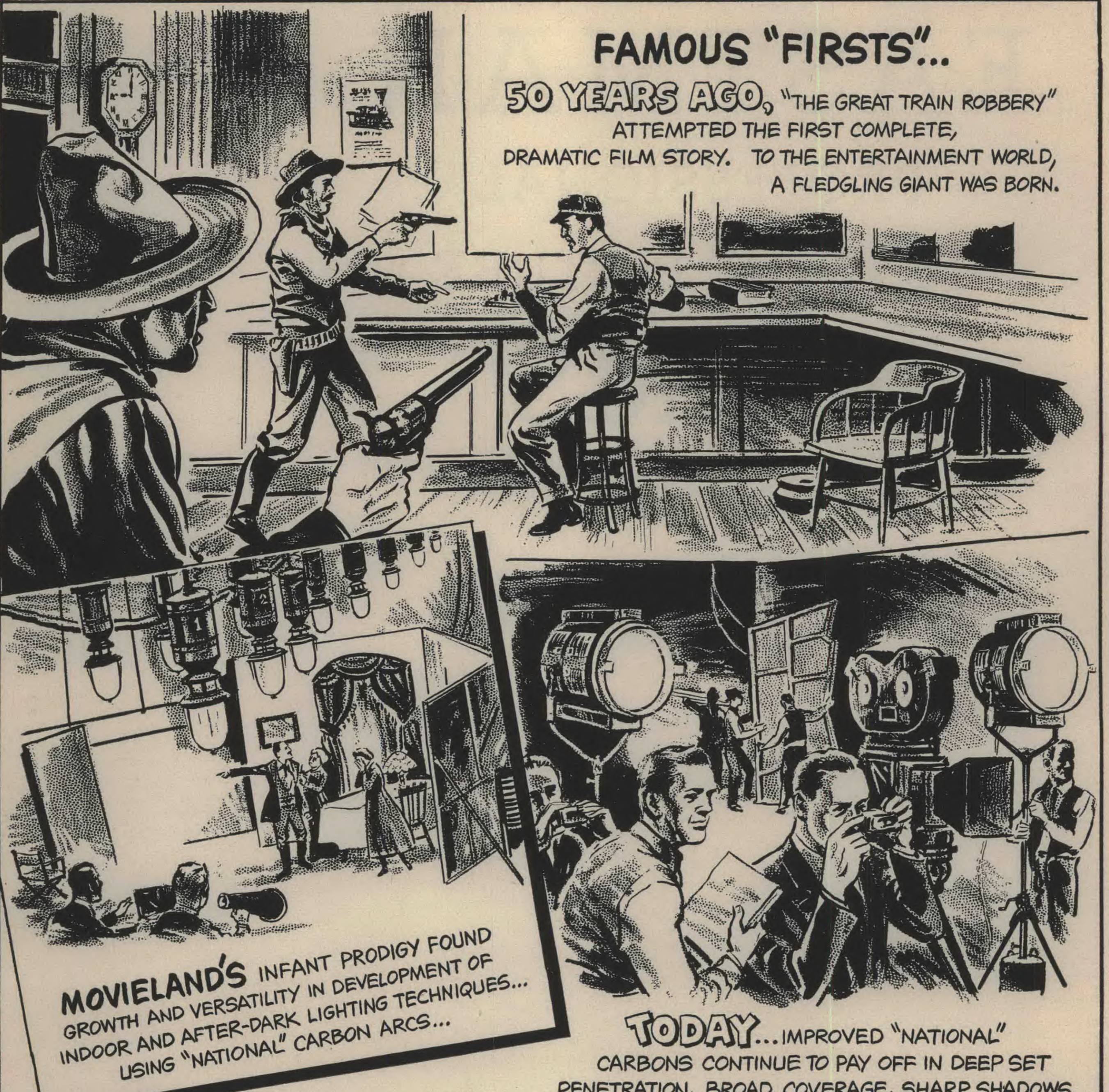

FAMOUS "FIRSTS"...

50 YEARS AGO, "THE GREAT TRAIN ROBBERY" ATTEMPTED THE FIRST COMPLETE, DRAMATIC FILM STORY. TO THE ENTERTAINMENT WORLD, A FLEDGLING GIANT WAS BORN.

MOVIELAND'S INFANT PRODIGY FOUND GROWTH AND VERSATILITY IN DEVELOPMENT OF INDOOR AND AFTER-DARK LIGHTING TECHNIQUES... USING "NATIONAL" CARBON ARCS...

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MEMBERS of Delta Kappa Alpha and faculty members of University of California's Department of Cinema plan an exhibit showing style and technique of contemporary animation. Left to right are author Andrew R. Caras, DKA president; Danny Weigand, faculty member; Herb Farmer, assistant head of Department of Cinema; and Warren Brown DKA member.

Delta Kappa Alpha—National Honorary Cinema Fraternity

A professional fraternity conducted in an academic environment, its Honorary Members include distinguished cameramen and others in motion pictures.

By ROGER ANDREW CARAS

UNIQUE AMONG the film organizations and societies in America is the National Honorary Cinema Fraternity, Delta Kappa Alpha: D for dramatic, K for kinematic, and A for aesthetic.

Now, with four chapters (U.S.C., N.Y.U., B.U., and U.C.L.A.), D.K.A. is unique in that it is, in essence, a professional fraternity conducted in an academic environment. It is open to those students regularly enrolled in an accredited university with either a major in cinema or a provable interest in the field, and who meet a set academic standard in their film courses. In most cases evidence of work in film is required. This can be met variously by professional, amateur, or university film production work or in some cases by general photographic experience.

The chief purpose of the fraternity is to provide its members with a point of contact with the film world and to provide an atmosphere for advancement in film work separate from but in cooperation with the universities themselves. In addition to its own program of activities, D.K.A. acts unofficially as a kind of service fraternity to these Cinema Departments.

The most successful single function of the University of Southern California (Alpha) chapter is the Film Classics Series. Each semester D.K.A. conducts a series of twelve weekly film programs surveying the history and development of film style and technique on the international level. Its current series, Films of Eight Nations*, is being attended by nearly seven-hundred people who either are admitted free when the program is included in their cinema class work, or who have paid $3.00 for a series subscription.

This series at U.S.C. is one of the most popular of campus functions and draws many members of the faculty and student body who are not engaged in film. Generally these people first subscribe because it is inexpensive entertainment—it figures out to less than twenty-five cents per evening of film. Almost inevitably these people develop an expanded interest in film and resubscribe as long as they are resident in the area. In effect this series creates an interested film audience which, through increased interest, attends more films in regular theaters. Frequently these people, whose only interest previously had been "Who's in it?" will stop to discuss the work of a director, cinematographer, or screen-writer. In this way at least, D.K.A. serves the industry.

In the weekly bulletin issued to the subscribers there is a short discussion of the program for that week, a suggested bibliography of film literature, and a 'Recommended Film List' for the whole Los Angeles area. Recently, as an experiment, this list was temporarily discontinued. Judging by the number of requests received for reinstatement of this program feature, this film list had a very definite positive effect. One visitor told the program committee that he was enjoying film more and seeing more of it since he started guiding himself by the list. Such reports, of course, are very encouraging.

At present the U.S.C. chapter is conducting an additional film series on alternate Friday nights for film students and their guests. Unlike Film Classics it is open only to film makers and film students. Members of the industry are always welcome. These functions are free and often last into the morning as members and guests show up with film cans tucked under their arms and offer up rare tid-bits as supplements to the program.

Some idea of the respect that D.K.A. has earned for itself can be gained by an examination of the list of Honorary

(Continued on Page 616)

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*Tight Little Island, Torment, My Little Chickadee, Man of Aran, Pinocchio, The Blue Angel, The Overlanders, Wilson, Treasure of Sierra Madre, Distant Journey, Fight for Life, Nature's Half Acre.

Electronic Recording Of Pictures On Tape

RCA's Video Tape Recording system unveiled December 1st is destined to change the process of making motion pictures.

By ARTHUR ROWAN

RADIO CORPORATION OF AMERICA, on December 1st, unveiled for the public its system of video tape recording — electronic recording of pictures on magnetic tape — which is destined to affect the future of motion pictures as it will television.

Video tape recording, or VTR, has many advantages over photographic processes and kinescope recording. With VTR it is possible to record electronically on a strip of tape and reproduce therefrom pictures in motion in black-and-white and in color, with no intermediate steps such as film processing and negative printing. "This new development," said RCA's Brigadier General David Sarnoff, "obviously holds great promise for the motion picture industry."

It also has caused some concern among cinematographers and other Hollywood technicians who wonder if electronic picture recording will mean an end to their careers. Some in the film manufacturing business and the film processing laboratories also have speculated on the system's ultimate effect on their business. You see, video picture tape requires no developing or printing; duplicating is a simple electronic step. And instead of the conventional motion picture film, narrow plastic tape, ½ inch in width, is used.

Regardless of how revolutionary all this may seem, RCA's engineers say the practical application of VTR to feature film production is probably many years away; there is yet much work to be done in refining and improving the process for this type application. At present, the new and revolutionary RCA system is strictly a tool for television, and it was for this field particularly that it was demonstrated earlier this month at the company's laboratories in Princeton, New Jersey.

Demonstration of picture reception was on two 14-inch screen video receivers of a live transmission in color relayed from New York city by microwave, and of an immediate VTR recorded playback of the same performance. The picture came through on receiver "A" via closed circuit. On receiver "B" appeared the same picture magnetically recorded on tape and simultaneously reproduced. The picture was picked up from a closed-circuit tube. The black-and-white magnetic picture had all the quality of the closed circuit TV picture.

As for the magnetic picture in color, one could tell there was some difference as compared with the closed-circuit TV color picture, which at this demonstration surpassed in color quality that demonstrated by RCA at NBC's studios in Burbank the previous month. Nevertheless, the magnetic color picture was "commercial." It had lost slightly in color saturation and resolution, and color balance was off a little.

Radio Corporation's timetable for its magnetic picture recording program shapes up about as follows: The December 1st demonstration was in form of a progress report, to let the electronics, television and motion picture industries know how far along they are. It will take about a year yet for the company to add necessary refinements now in work. It will be about two years before the refined process is ready for practical use in transcriptions and television.

Perhaps a year later, it will be ready for use in the motion picture industry as an instant playback device or auxiliary to motion picture cameras on the set. Use of VTR in this manner would be to speed up production with considerable savings of time and money resulting. Retakes could be made immediately while players were assembled on the set and still in the mood. The need to wait several days for "dailies" in color productions, as at present, would be eliminated entirely.

Finally, about two years later, the process should be available for motion picture production of features, short subjects, newsreels, etc., with another year required to make it ready for production of release prints.

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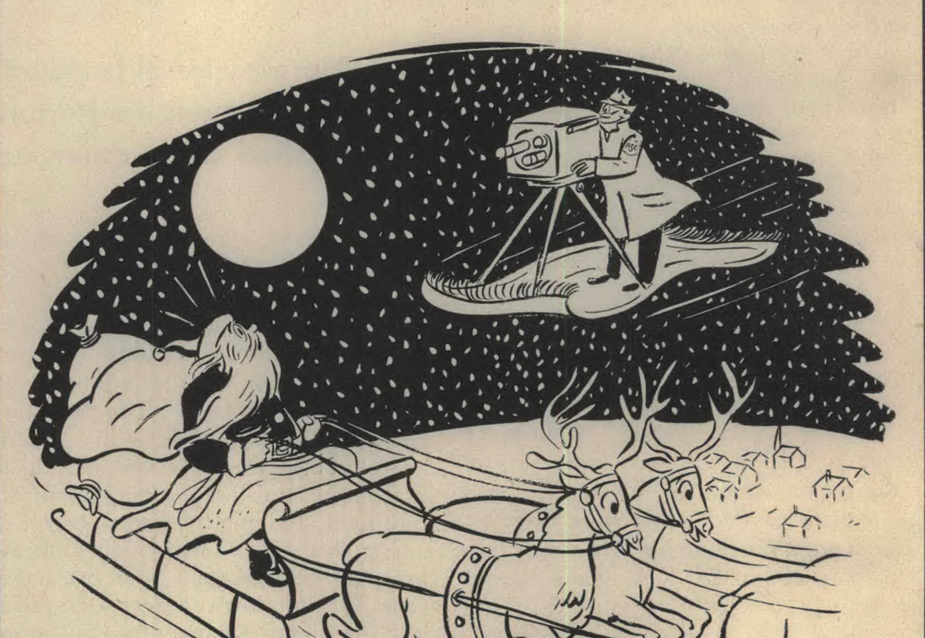

"It's the latest thing, Santa — video tape recording."

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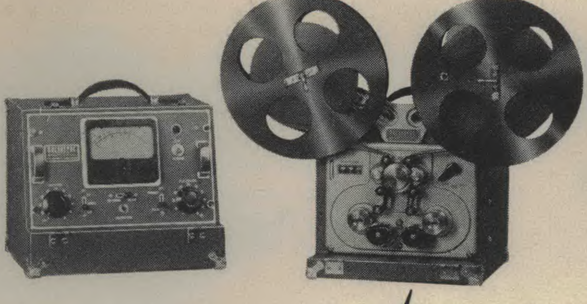
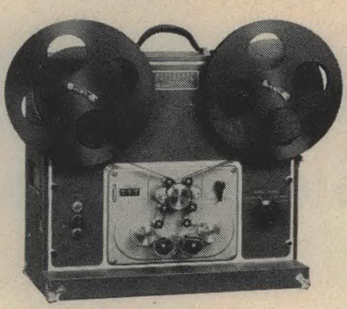
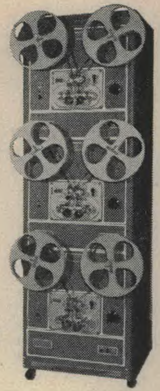
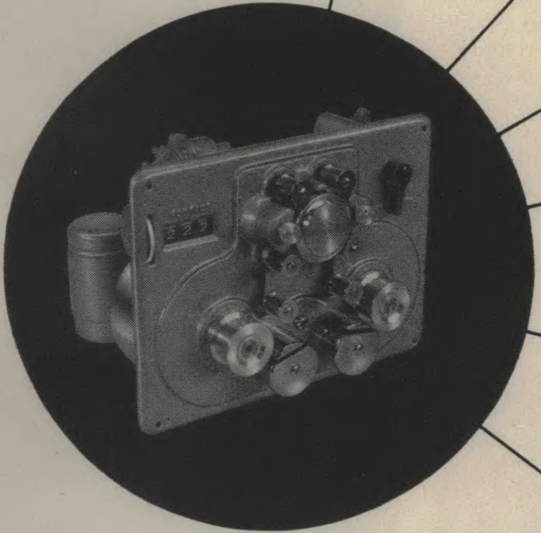


MODEL SW-602-RP
RACK-MOUNT RECORDER
IN PORTABLE CASE



MODEL SW-602-D3
THREE INTERLOCKED DUMMIES
WITH PLAYBACK PRE-AMPLIFIERS





MODEL SW-335
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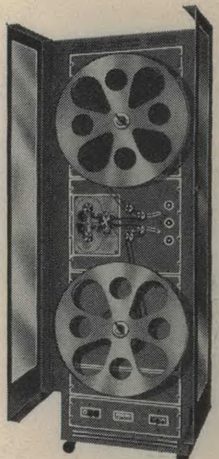
THEATRE
PLAYBACK SYSTEM



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Closeup Photography With 16mm Single-film Stereo Systems

By ERNST WILDI

Now that it is possible to shoot closeup stereo scenes with single-film stereo systems, producers of industrial and instructional films, and medical schools, doctors and universities, etc., have discovered the fine application of stereo films in their work. Movements of machines, manufacturing processes, and medical specimens can now be shown on movie screens in a more effective way. Family films and travelogues can also be made more complete and interesting through the use of stereo closeups.

The single-film 3-D systems presently on the market, (Bolex, Elgeet, Nord) all have a fixed interocular; therefore, in order to shoot objects closer than 5 feet, a special closeup device is needed. Such a closeup attachment is already available for the Bolex unit and will soon be on the market for the Elgeet stereo lens. If pictures are taken at a distance of less than 5 feet without a closeup device, the separation of the left and right image on the screen would exceed 2½″ and would therefore be uncomfortable to view since our eyes cannot toe out.

The stereo closeup attachment consists basically of two prisms placed in front of the right and left taking lens, causing the image axis to cross at a shorter distance instead of at about 10 feet, as is the case with the basic stereo lens. Consequently, the closeup attachment provides basically the same thing as is done when shooting closeups with a two camera setup, namely a toeing-in of the 2 lenses (or cameras). Since only the Bolex closeup attachment is actually on the market at this writing, our discussion of shooting 3-D closeups is based on the Bolex stereo equipment.

Instead of individually mounting the left and right prisms in front of the two lenses of the 3-D attachment, they are, for convenience, mounted on a rotating disc. This disc is turned by means of a knurled knob, and clicks into three different positions.

One position contains the closeup prism I for shooting pictures from 2½′

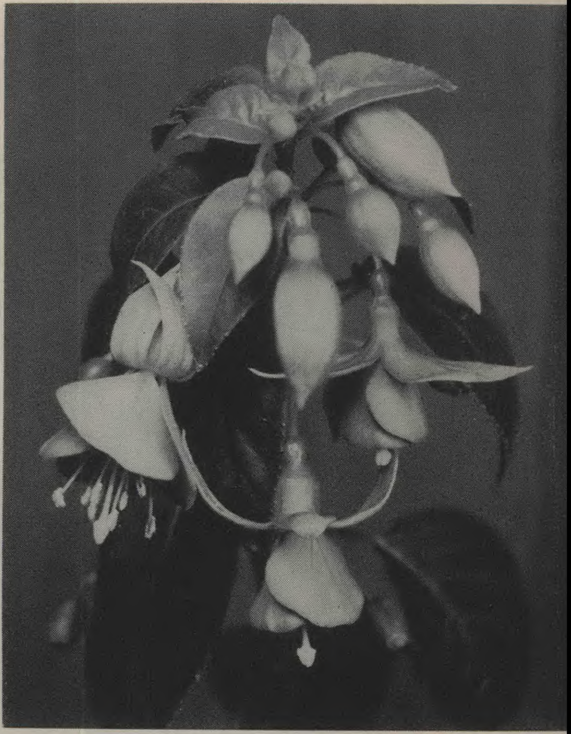


FIG. 1—TO PHOTOGRAPH closeups of flowers and other similar small subjects in 16mm 3-D, you need special closeup lenses, same as for regular filming of closeups. Pictured on this page and at right is the Bolex 3-D closeup attachment with diagrams that indicate method of use.

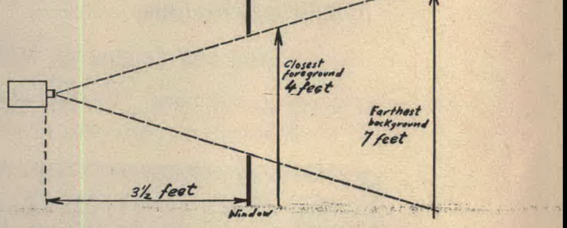
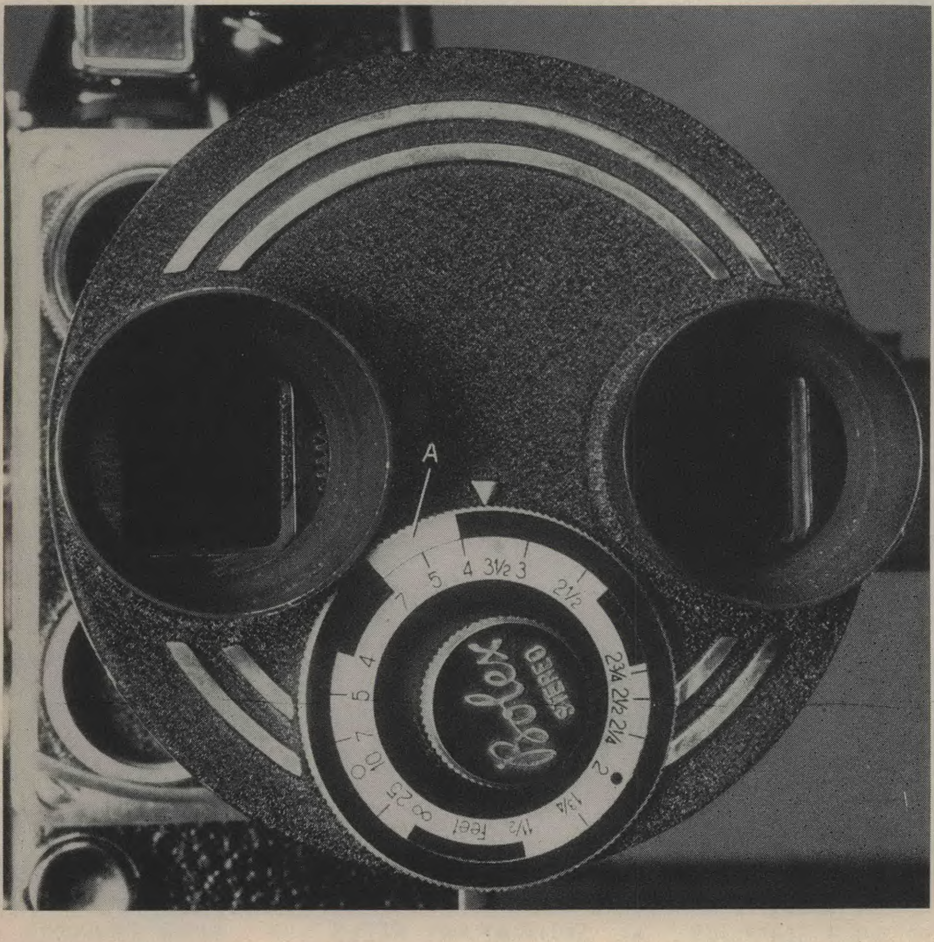


FIG. 2—Showing closeup lens No. 1 in position before camera, with the stereo window set at 3½ feet. (Note relationship of pointer at top of dial with footage marks on second ring.) White area (A) on outer dial ring indicates that all objects should be from 4 to 7 feet behind the window—good distance for filming people in closeup.



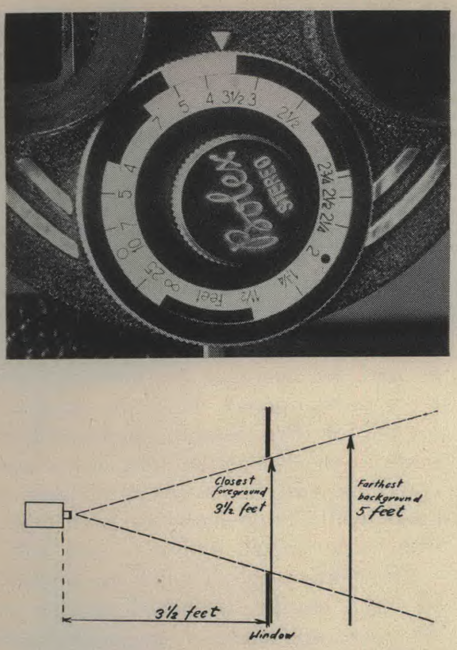


FIG. 3—Closeup lens No. 1 with window at 3½ ft. position. Where nearest object is at plane of window (as in diagram), the farthest should not be more than 5 ft. away.

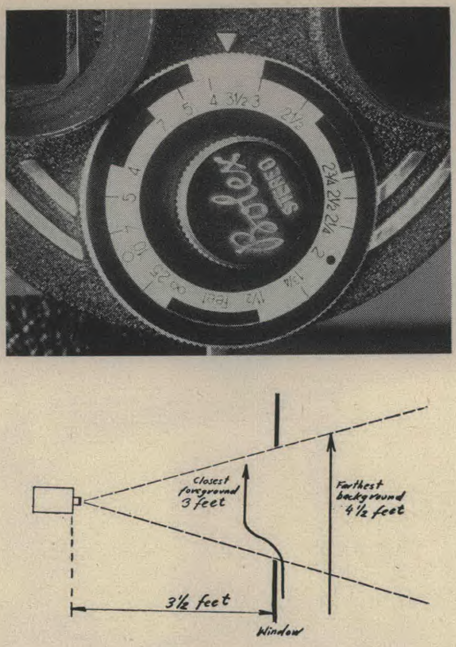


FIG. 4—Lens set same as in Fig. 3. Objects can be partly before and behind window as long as they are in the stereo depth of field indicated by white area on dial (3 to 4½′).

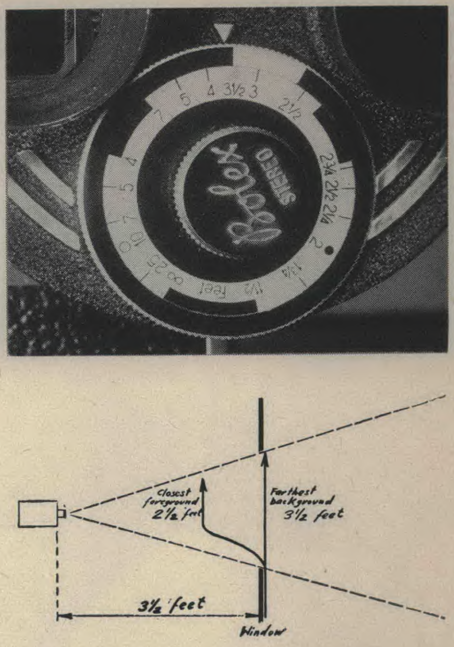


FIG. 5—CU lens No. 1 with window set at 3½ ft. Where background object is at the plane of the window (3½ ft.). closest object should not be closer than 2½ ft.

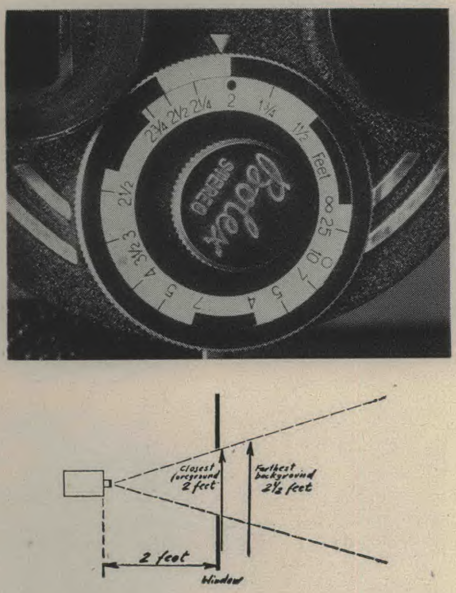


FIG. 6—Now we have closeup lens No. 2 in place, with window set at 2 ft. position. Where all objects are to appear behind screen, they should be placed within the 2 to 2½ ft. area.

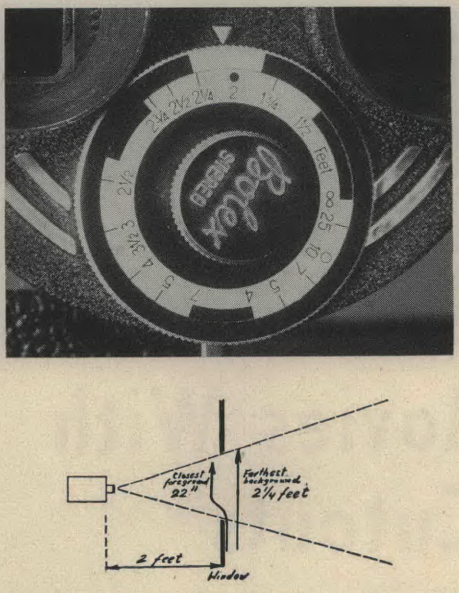


FIG. 7—CU lens No. 2 same as at left. If farthest part of subject is at 2¼ ft., the closest part can come through the window and be as near to camera as 22 inches.

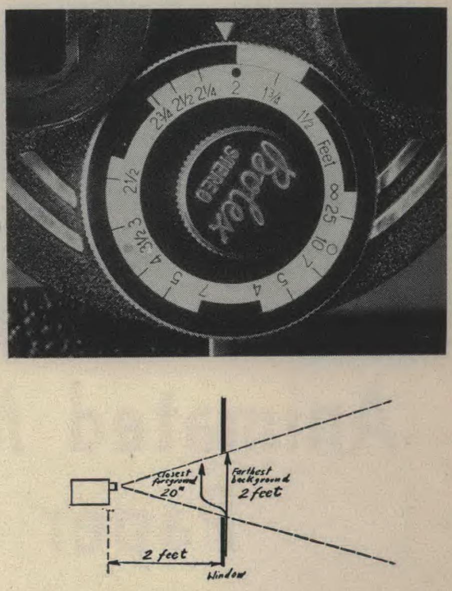


FIG. 8—CU lens No. 2 same as at left. Where entire subject is to appear in front of the window, stereo depth of field is only 4 inches—from 24 to 20 inches.

to 7′; the next position, a set of closeup prisms II for shooting pictures fram 1½′ to 2¾′. Finally the third position, employing no prism, is used for shooting pictures from 5′ to infinity. Because of this arrangement, the disc becomes part of the equipment and need not be removed (the closeup attachment should be installed on the basic stereo lens by an authorized Bolex Service Center).

Since both the Bolex and Elgeet 3-D attachments are fiixed-focus stereo systems, pictures filmed at less than 5 feet are not sufficiently sharp (at least not at f/2.8). The closeup prisms are actually a combination of prism and closeup lens, offering automatically sharp pictures as long as they are shot within the distances listed above.

The disc arrangement eliminates any incorrect or inaccurate placement of the prism, enables you to switch from a long shot to a closeup instantly, eliminates carrying along many different accessories, and the dial which turns the prism is engraved with all the details needed for shooting good stereo closeups. These details are: a) Position of

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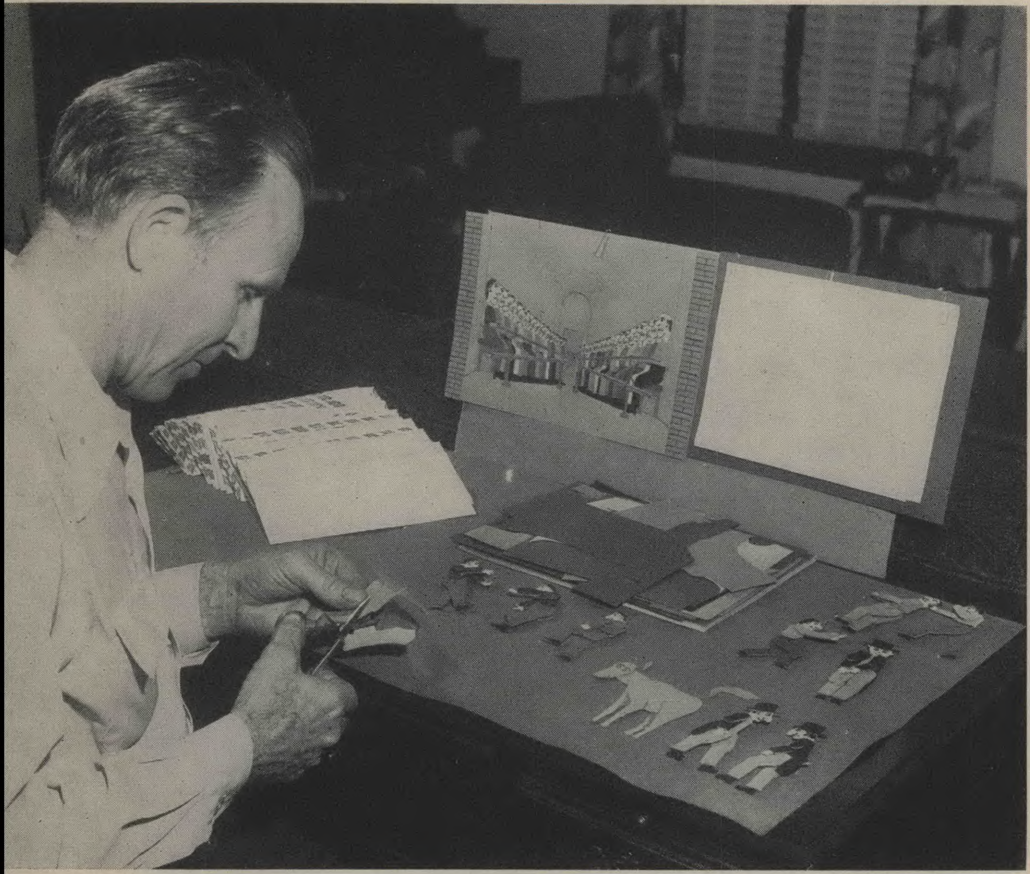


8MM MOVIE MAKER Frank Kallenberg casts the characters for his animated movies using shears and colored paper. Here he is cutting and assembling players and props for his latest film, using drawing at rear as guide. When finished, the parts for each figure are placed in separate envelopes to await call before the camera.

Animated Movies With Paper Cutouts

This 8mm movie maker built his own animation stand with which he animates and films action of figures cut from colored paper.

By GEORGE W. CUSHMAN

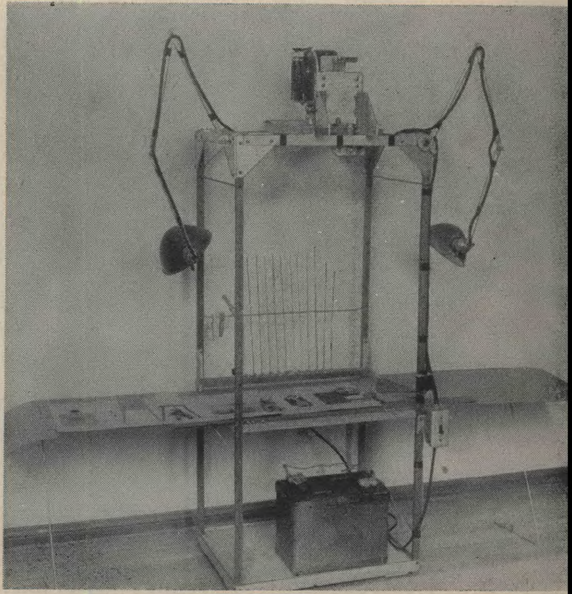
ANIMATED CARTOONS have long held a fascination for Frank Kallenberg, Long Beach, Calif., movie amateur, and being an adventuresome cinebug, he wanted to make animated movies with his 8mm camera. But he couldn't draw. Then one day, while cutting out some colored paper, his doodling scissors fashioned the likness of a man. "If I can't draw, I can cut," he exclaimed, and the paper man ended up before his movie camera in Kallenberg's first attempt at animation.

The resulting sucess of his first animated movie so overwhelmed modest Kallenberg that he made a second film, and now he's planning his third—with colored paper cutouts cutting capers in front of his 8mm movie camera.

With the experience gained in making his initial animated movie, Kallenberg has learned a lot of tricks about his particular field of activity—tricks you can't learn from books. Only from experience. His intricate, homemade animation stand pictured below proves the point.

While making his first animated film, he soon learned that one needs a rigid piece of equipment designed especially for the job. Professional stands, such as those at the Disney studios, weigh several tons, cost thousands of dollars to build. Kallenberg made his from angle iron, scrap metal, and nuts and bolts.

The four uprights, which are anchored on a sturdy baseboard resting on the floor, are made of angle iron and are securely braced at the top to prevent any movement of the equipment during shooting. The camera, an 8mm Bolex, is mounted overhead with the lens in vertical position. The camera's single-frame release is actuated by a solenoid, which is powered by a 6-volt storage battery mounted on the baseboard. The solenoid is an ordinary automobile starter switch, purchased at an auto supply store. The single frame control button is remotely located at the right side of the stand, next to the light switch. This enables Kallenberg to turn on the lights and press the button that exposes a single frame of film without standing up or otherwise changing position before the animation board.



KALLENBERG'S homemade animation stand is the conventional vertical type, supporting his 8mm Bolex camera overhead. Wide animation table enables assembling large backgrounds. Wires at rear serve as guides.

Although the lights are mounted on adjustable supports, once they are set and tested, they are never touched again during the production.

There are two other interesting innovations incorporated in this unique animation stand: one is the wide animation board or platform which extends out at either side of the stand. Here is ample room on which to mount a whole series of backgrounds and thus obtain sequence in shooting with a minimum of cutting. This platform is six feet in width. It is a simple matter to manipulate a background back and forth (from left to right or vice versa) while a character is made to walk, run, or ride in his cardboard Cadillac. Also, since many of the backgrounds often involve intricate set-ups with one or more moving parts, Kallenbreg can set up four or five backgrounds in the sequence in which they are to appear in the story and photograph them in sequential order. This eliminates a great deal of editing and splicing after the film is shot and processed.

The second innovation is the series of upright wires, which may be seen in the illustration extending upward from the table and at the rear. The wires are rigidly spaced an inch apart and are hinged so they may be dropped forward across the composition within the filming area taken in by the camera. The purpose of these wires is to serve as *positioning guides* when working with small segments of cutouts during an animation sequence. In working with the movable actors and props, none are fastened to the background and therefore they can become jarred from position unless checked frequently. The positioning guides serve this purpose.

Take the action of a man tipping his hat. The jointed figure is laid flat on the base, and his hands, etc., are moved progressively and shot a frame at a time to effect the desired action. In moving the body members, the main body of the actor is often moved also and it becomes necessary to realign it to prevent any "jump" in the finished picture. Here, the positioning guide is dropped down and the figure lined up with it according to guide marks originally placed on it at the start of the sequence. This insures that on the screen, the actor's body remains in position, while his arms, head, etc., move according to script.

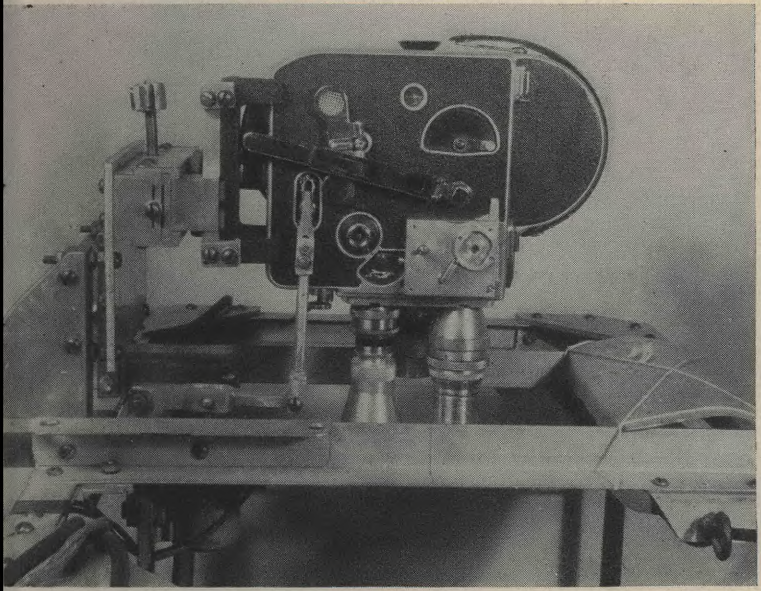
Because amateur ventures such as this are rare, there was no experienced individual Kallenberg could turn to for advice, when he started out. What he has learned has been through trial and error. He found, for example, that when he makes a character for his movies with scissors and paper, he often must make two—a right and a left. Here detail must be exact. The left side, for example, must show such details as part of the hair, and a breast pocket in the coat. Similar details must be included in the right-side cutout. Reason for the two is that invariably the character will be shown moving across the scene first in one direction and then the other.

Perhaps one of the most interesting things about Kallenberg's animated projects is the number of players and props he makes for each picture. Each character, animal or prop that moves requires several interrelated parts. Even the simplest character requires a dozen or more—arms, legs, feet, heads, etc. Some of these parts cannot conveniently be hinged with fasteners or pins. This means the parts have to be segregated and not mixed with those of other characters, etc. Kallenberg solved this problem by placing all parts of a given character, prop, etc., in a separate envelope. They are never removed from it except when called before the camera, and then the parts are promptly put back in the envelope to await the next call before the lens.

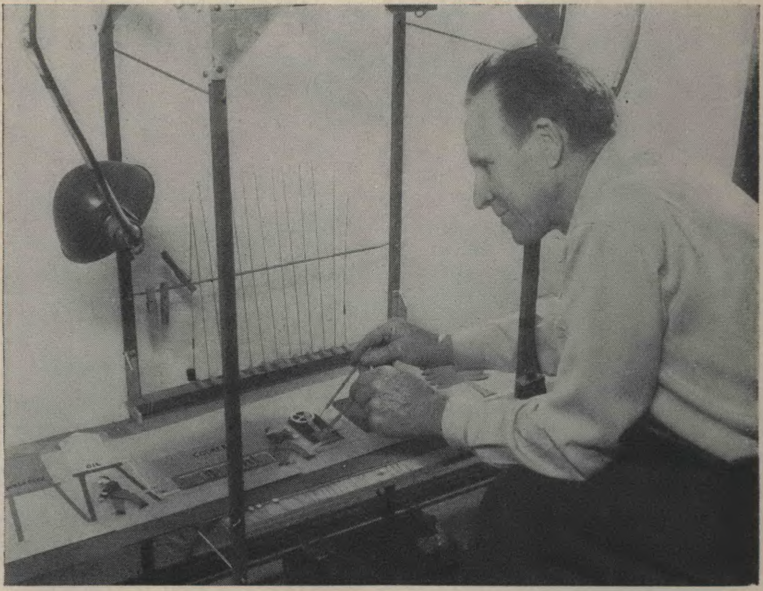
About the only real bottleneck Kallenberg has encountered is locating the exact colors of paper he needs. As a result of his continuing search, he not only knows every store for miles around which sells colored paper, but he knows every color they have in stock. Because color plays such a large part in his pictures, production of a sequence is often held up indefinitely pending the location of the paper having the color or tint needed. Sometimes he has to buy a whole unbroken package of assorted colors in order to get a single sheet of just the right tint or color.

Kallenberg's initial animated film, "Yowie," was a short one—less than fifty feet. He sort of made it up as he went along, he says. His friends liked it so well he decided to make another. His second film was "Mule Segarettes," a humorous saga on how cigarettes are made. This ran close to 200 feet and required a year to complete. Not all of that year, however, was spent on clicking the single-frame lever of his 8mm

(Continued on Page 617)



THE BOLEX CAMERA is rigidly supported on a metal framework. Single-frame lever is actuated by a solenoid powered by an automobile storage battery. Instead of moving camera up and down to change size of field or for "closeups," same effect is gained with different lenses.



INTRICATE MOVEMENT OF the parts of figures (arms, legs, etc.,) is effected through use of long, sharp pins, which gives more precise positioning of parts than if moved by hand. Here also are shown the positioning guides —vertical wires at rear.

Important Announcement

regarding

American Cinematographer's

3-D FILM FESTIVAL

for

16mm Stereoscopic Motion Pictures

Due to the increasing number of applications received from film makers in foreign countries who wish to participate in the Festival, and because the previously announced closing date would preclude getting these entries into the committee's hands in time, the Festival Committee announces that

Date For The Festival

has been set ahead to

MARCH 4, 1954

We are delighted that so many foreign film makers wish to participate in this first of stereoscopic film festivals, and in view of this extraordinary interest the Committee believes that an extension of the Festival date is justified.

The extension will also give many film makers in this country who wish to participate additional time in which to complete and submit their film.

Participation in this Festival is open to all makers of amateur, semi-professional, and professional 16mm single-film three-dimensional motion picures, black-and-white or color. Those whose films are accepted for Festival screenings will receive the distinguished American Cinematographer Merit Filming Award.

Festival Committee

CLOSEUP PHOTOGRAPHY WITH 16MM STEREO

(Continued from Page 599)

the stereo window. b) Range of stereoscopic depth of field.

As explained in previous articles on this subject, in the projection of Bolex, Elgeet or Nord stereo movies, the screen becomes a window with objects photographed appearing either in front or in back of this window. This situation also prevails when shooting with closeup lens I or II.

With closeup lens I, the window is 3½′ from the camera. An object filmed at this distance will appear to be at the plane of the screen. Objects from 2½′ to 3½′ appear to be in front, and objects from 3½′ to 7′ behind the screen.

With closeup lens II, the window is at 2′; objects between 1½′ and 2′ are in front; objects from 2′ to 2¾′ behind the screen. (With the basic lens, the window is at 10′). The relative position of the window is indicated by colored circles on the dial.

Stereoscopic depth of field has nothing to do with picture sharpness; however, it is necessary that all object appear within a certain range of distances, which can easily be determined with the dial on the Bolex closeup attachment. The closest and farthest objects should lie within the white area of the outer dial when this is brought opposite the corresponding distances of the inner dial. (See illustrations) If this is not done, foreground and background cannot be viewed comfortably together because of too great a difference in image separation. This outer dial is merely an indicator and does not change the characteristics of the stereo attachment in any way.

The examples (Figs. 2 to 8) illustrate the use of the Bolex 3-D closeup attachment. For those who may use other stereo closeup prisms, the following chart of stereoscopic depth of field may be followed for a 2½″ lens separation.

If the minimum distance is:	*The maximum distance should not be more than:*
48″	84″
42″	60″
36″	54″
33″	45″
30″	42″
27″	34″
24″	30″
22″	27″
20″	24″
18″	22″

The field of view covered at various distances with the twin ½″ lens are:

(Continued on Page 604)

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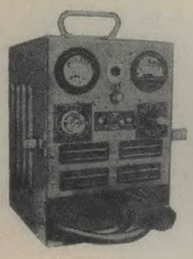
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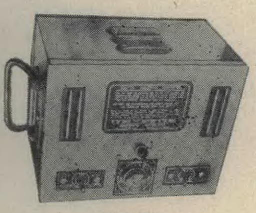
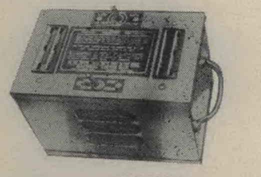

SENIOR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OPERATION: The Colortran is an electrical device which increases the efficiency of ordinary 110-115 volt bulbs by 180%. The PAR 38 150w. bulb, which is recommended here, will give MORE photographic light than a #4 photoflood or TWICE the light of a 500-750 w. spotlight. **CURRENT CONSUMPTION:** A #4 photoflood requires 8.7 amperes, whereas a PAR 38 and Colortran needs only 2.5 amperes and gives more light than the photoflood. Three standard 1000w. bulbs will blow a 20 amp house fuse, but the Colortran and SEVEN PAR 38 150w. bulbs will not blow out a 20 amp. fuse. AMAZING BUT TRUE. . . . COLORTRANS DELIVER 3200° and 3450° KELVIN COLOR-CORRECT LIGHT.

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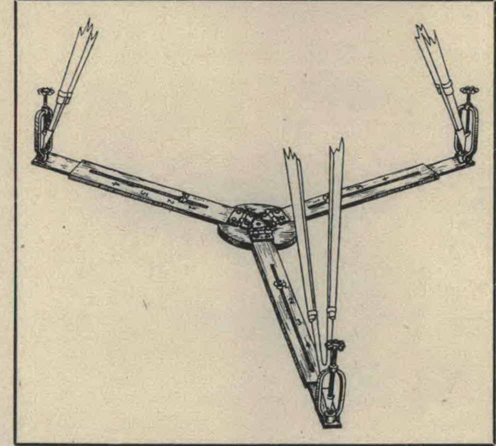

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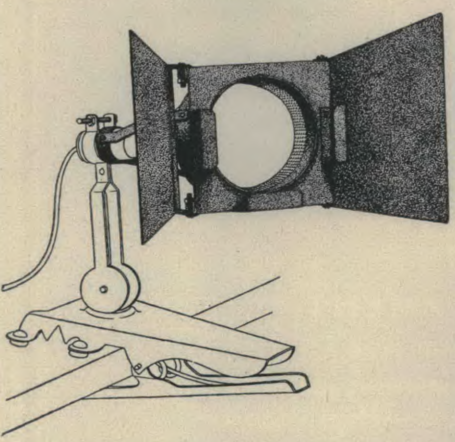

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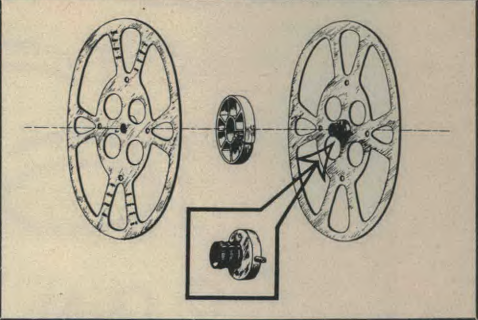

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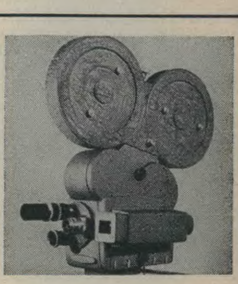

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4′	13″	17″
3½′	11½″	15″
3′	9¾″	12¾″
2¾	9″	11¾″
2½′	8″	10½″
2¼′	7¼″	9½″
2′	6½″	8½″
1¾′	5¾″	7½″
1½′	5″	6½″

The procedure for shooting stereo closeups is as follows:

1. First decide whether the object to be photographed should be in front of or behind the window. It is best to have in front of the window only those objects which are not cropped by the window frame at any point; in other words, objects which could actually come through the window, without cutting into the frame. In the example below, place the flower either completely behind the window or have the blossom come through the window, with its stem behind the window. Allowing an object to cut into the window frame, especially on the sides, destroys the realism of stereo. To what extent the illusion is destroyed depends a great deal on the subject. It will be much less severe if the frame cutting is done by a dark, unimportant object than by a well lighted subject, especially the main object. But for best results, do not crop the window frame at all.

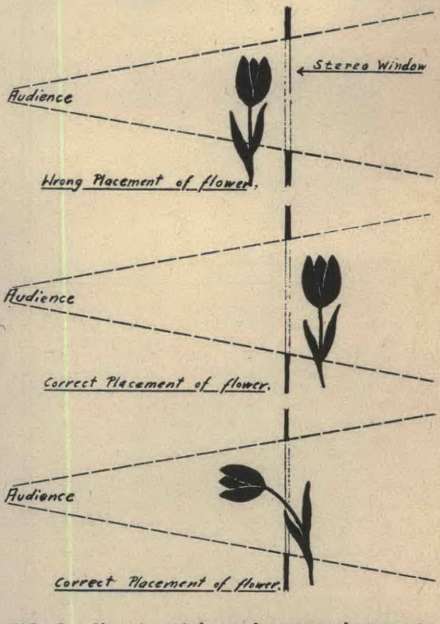
Stereo Window
Audience
Wrong Placement of flower.
Audience
Correct Placement of flower.
Audience
Correct Placement of flower.

FIG. 8—Showing right and wrong placement of object with respect to the stereo frame.

2. Photograph the scene in such a way that all objects are within the

stereoscopic depth of field. As you can see from the chart, the closer you are to subject with the camera, the shallower the depth. For this reason disturbing backgrounds should be eliminated in one of the following three ways:

a) Choose a natural plain background. In an outdoor closeup scene, use a cloudless blue sky as a background. This is especially ideal when photographing flowers. Shoot from a low angle or cut the flower and have an assistant hold it against the sky before the camera.

b) Use backdrops such as plain colored cardboards or pieces of cloth large enough to cover the entire background. These are set up behind the object at a convenient distance. Since they do not contain a distracting pattern, they need not be within the depth of field.

c) Directional lighting. The object is lighted with point sources (spotlights) in such a way that objects in the background are not hit by the light and are therefore subdued on the film.

3 Keep in mind that depth in closeups will be somewhat exaggerated; therefore set up the camera in such a way, or at a distance, which will minimize the distortion. The closer the camera the more exaggeration. While this distortion in most cases is not objectionable, it can be noticeable in closeup scenes of faces. The best rule for avoiding exaggerated long noses is to shoot people at not less than 5 feet or take a ¾ view rather than full face. (Distortion in depth can be avoided by a stereo system with variable interaxial spacing of less than 2½" such as is the case for example in Norling's 3-D camera.)

4. Take a closeup reading with an exposure meter and set the lens diaphragm accordingly. For stereo closeups, the diaphragm is set the same as for long shots. When shooting in colors, the effect will be more pleasing if the images are overexposed by ¼ to ½ stop.

5. Set the viewfinder in the 15 (16) mm position. Adjust the finder field with the stereo mask and set the parallax correction, according to the conversion chart on the viewfinder bracket. For distances of 34" and more, the regular viewfinder mask with a centric opening is used. For closer distances, the special excentric mask is inserted. The two masks are marked with circles of different colors, the centric mask having a white and blue circle and the excentric mask, one in black; these correspond to the color of the dots on the dial of the closeup attachment. When using the eccentric mask, parallax

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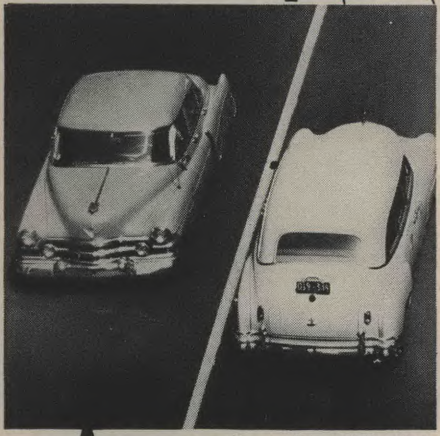
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correction should be set at 2 feet.

The same filter adapter and sunshade used on the basic lens can also be used in front of the closeup attachment.

The shooting of stereo closeups requires some careful selection of subject matter, but such efforts will be rewarded by the resulting fascinating stereo shots.

PARAMOUNT'S "LAZY-8" CAMERA

(Continued from Page 589)

policy at Paramount studios has been to select first the most practical picture shape and then the technique. It is our belief that for most screen entertainment, the picture aspect ratio should be under 2-to-1. Paramount, as is now generally known, selected and has standardized upon the aspect ratio of 1.66-to-1. Technically, the "Lazy-8" procedure gives the best quality picture for this aspect ratio. Further studies now indicate that this same procedure will provide the best negative for the ultimate presentation of any picture in any aspect ratio from 1.33-to-1 to 3-to-1.

There is an interesting antecedent history behind the unique cameras we are using in our "Lazy-8" filming procedure. They were not originally designed for the use presently put to but were built back in the late 20's by the William P. Stein Company of New York for the old William Fox "Natural Color" system. The latter was a two-color method and the camera was designed to move film past the gate two frames at a time. Here it was exposed through two lenses, one above the other, and having appropriate filters for the two-color system.

Following collapse of the system, the cameras were disposed of and some were purchased by other studios, by collectors of cinematic equipment, and others. Not until the recent advent of 3-D and wide-screen activity among major studios did the possibilities of these old double-frame cameras come to light as ideal for wide-screen photography. John R. Bishop, head of Paramount Studio's camera and film processing departments, conducted a number of tests with one of the cameras fitted with Leica lenses. The later were found to be ideal for the purpose because they are designed to cover the full area of a double 35mm frame. One of the studio's first steps was to cut out the separation between the twin apertures of the camera, leaving a single aperture 1.472" in width. The camera was reworked and further modernized, and a blimp was built for it so it could be used on the sound stage.

As soon as a second camera could be acquired, it was given similar modification by Bishop and his engineers. Soon afterward the studio made the important pre-production tests that led to the decision to shoot "White Christmas" with the "Lazy-8" cameras, using Eastman color negative. The release prints will be made by Technicolor.

Despite some apprehension that the cameras might soon develop mechanical troubles as a result of operating on their sides instead of in the erect position originally intended, the camera crew filming "White Christmas" has encountered less than two hours delay in 62 days of shooting—a figure considered normal with a standard or new camera not entirely broken in.

Leica-type lenses are being used on the "Lazy-8" cameras; the 85mm lens is comparable in coverage to that of a 50mm lens on a conventional camera; the 50mm to a 33mm; a 30mm to a 23mm; and the 28mm to the wide-angle 17mm.

Loyal Griggs, ASC, who is directing the photography of "White Christmas," is delighted with the performance of the camera. John Fulton, ASC, and Paul Lerpae, ASC, of Paramount's special photographic effects department have also used the "Lazy-8" cameras for the special photography required for the production.

Some indication of the faith Paramount Studios has in its new "Lazy-8" photographic procedure is seen in the fact the company presently has four well-known camera manufacturers designing an improved camera of this type. The studio estimates it will need at least ten, and it is presently inviting other major studios to study the camera and its results with the object of adopting the "Lazy-8" procedure for making wide-screen motion pictures. Paramount's plan is to photograph all its future color productions with this camera.

As for any added cost involved through use of the new camera, it is confined to negative only. The camera uses twice as much film for a given take (because the equivalent of two standard frames of film passes before the lens in each single-frame exposure), and it is therefore necessary to reload oftener; otherwise, use of the camera is as convenient as any standard studio camera.

There is presently in process of completion in the Paramount camera shop, a new streamlined blimp for the "Lazy-

8." The manner in which it was built is rather unique. First the camera was given a close-fitting protective covering, then it was covered with modeling clay. A wax mould was then made from which a replica of the camera plus its covering was cast. Around this replica a perforated steel framework was formed. This was covered on both sides with a layer of rubber about half-an-inch thick. The rubber was then vulcanized to the framework to form the solid, yet slightly resiliant, sound-absorbent wall of the blimp.

Prior to designing this blimp, the method of mounting the camera to the base was altered slightly from the original. With the initial "Lazy-8" camera, a hydraulically-balanced vertical column was installed at one side to aid in supporting the camera in horizontal position and to prevent any undue motion that might be induced by the overhanging film magazines. This arrangement was redesigned, and the new mount not only reduces over-all height of the camera but provides a more efficient support.

With wide-screen motion pictures now definitely established as a welcome new improvement in the film entertainment industry, Paramount believes that the new "Lazy-8" photographic system is ideally suited to the production of wide-screen pictures having the fine resolution and definition that good motion picture exhibition demands.

BETTER PHOTOGRAPHY FOR TV COMMERCIALS

(Continued from Page 592)

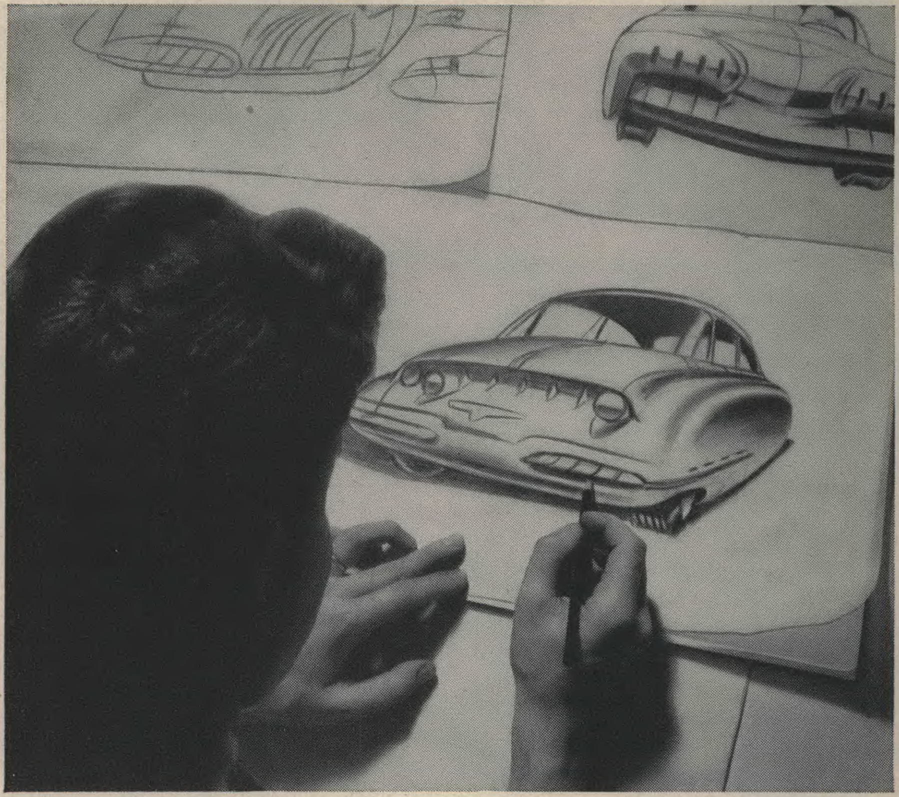
inserted as the important commercial in a show on which the sponsor spent more than $40,000 for time and talent.

Where a show is photographically of first quality, unless the commercial measures up to the same standards, the audience will not continue to watch it with equal interest, if they watch it at all. By using inferior workmanship in the commercial, the client himself helps to reduce his audience and to reduce the potency of his advertising message.

Any sponsor's message that does not equal *or excel* both in audio and video quality the show in which that message appears is failing to take advantage of the very reason the show is being telecast in the first place.

Are advertisers aware of this problem? Yes and no. But not much is being done to remedy the situation. For example, several months ago, a large national agency, in an attempt to improve commercials which were amateurish and of poor quality, called upon us for help. Rather than change the present

16mm Film Achievements



"The Look of Things"

It is a truism that the most perfect printing and projection in the world cannot make up for uninteresting subject matter in a film. But the opposite also holds true. The finer the subject, the more it deserves—and needs—perfect laboratory duplication to set it forth.

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locale of filming somewhere in the East, the agency flew a technician out here who watched what we were doing, then purchased similar lighting equipment, made notes of everything he observed and even requested samples of the paint we used on our props! I feel strongly that a sponsor should spend as much time photographing its product as in photographing its star; and that a sponsor is not taking advantage of the media unless he makes every attempt to have the sales message actually superior to the show. This, of course, might not be possible, but certainly it should motivate the filming of every commercial.

One advertiser who believes as we do is the Carnation Company, which shares sponsorship of the Burns and Allen television show. Through Erwin, Wasey & Company advertising agency we have been producing the Carnation commercials on film for the past two years. The American Society of Cinematographers rightfully recognized the importance of carefully photographed TV film commercials this year by presenting cinematographer Philip Tannura its merit filming award for excellence of photography of the Carnation commercials. Tannura also directs photography of the weekly Burns and Allen show.

Following his acceptance of the award, Tannura explained that filming the Carnation commercials is done with the same skill and care that is used in photographing the show. "We use the same film (35mm), lighting, equipment, comparable time, and the same professional staff of technicians to shoot the commercials as are used in filming the show," he said. "Moreover, the commercials are invariably filmed on the same day the show is filmed and often on the same sets. We frequently use both cameras (two are used in filming the show) where any intercutting is to be done. Each commercial, which runs between 1 and 1½ minutes, may involve as many as six cuts."

The size of film used in photographing the commercials is important, too, according to Tannura who says that all TV commercials should be shot on 35mm film instead of 16mm. "This is because a reduction print on 16mm from 35mm negative will give far better results than a 16mm print from a 16mm negative," he points out.

As proof of the effect of the better photographed Carnation commercials, the response to this sponsor's recent television cook book offers, directly traceable to its filmed commercials, has reached an all-time high for a food advertiser.

Unless sponsors who use film take full advantage of all of the skills of the motion picture industry and insist that the same quality go into the commercial portion of their show as demanded for the actual entertainment portion, they are not getting full value received.

There will be a big awakening to this problem some day. It's too bad that the awakening isn't *now*.

IS 3-D DEAD . . ?

(Continued from Page 586)

veloped two separate remedial devices for the exhibitor—one a low cost package, illustrated in Fig. 6, and the other an all-electronic sync monitoring device (Fig. 5) for the large, first-run houses. Both are as interesting as they are efficient.

Polaroid's activity in this direction is considered one of the most important ever undertaken by anyone to improve the standards of motion picture exhibition. Both devices mentioned above were proved-out in test installations in New York and Boston areas. Following this, Polaroid set up its nation-wide 3-D Technical Service program designed to perfect the projection quality of stereoscopic films in the 4500-odd U. S. theatres which were equipped at that time to show 3-D pictures.

Polaroid's low cost "3-D Sync Unit" pictured in Fig. 6 consists of a sync monitor which detects small mis-synchronization and indicates same to the projectionist by means of variation in strobe stripes visible through the view window; large sync errors are detected by means of the unique "tell-tale" filter mounted at the top of the unit. Operating at 60 cycles, it plugs into any A.C. outlet. The sync control, used in conjunction with the monitor, permits the projectionist to make relative adjustments in the two projectors in 1/6th frame steps. Along with these two pieces is a Polaroid filter kit. The complete package is priced at $95.00—said to be less than Polaroid's actual cost. The package is provided at no cost whatever to theatres using Polaroid glasses.

The more refined and costlier sync unit, known as the Polaroid 3-D Electronic Sync Monitor Model 21 (Fig. 5), comprises a phototube housing, a large meter, and the main electronic chassis. In use, the phototube housing is set up in the theatre and pointed toward the screen. The two phototubes act the same as two eyes, and are properly filtered so that one tube monitors the left-eye image and the other the right eye image. The meter unit, which is coupled to the

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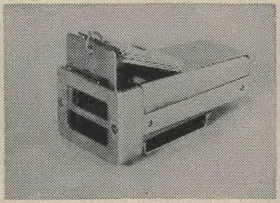

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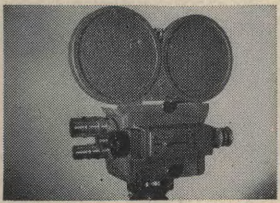

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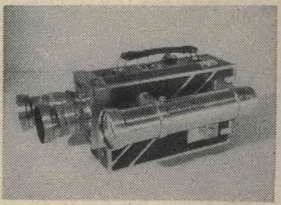

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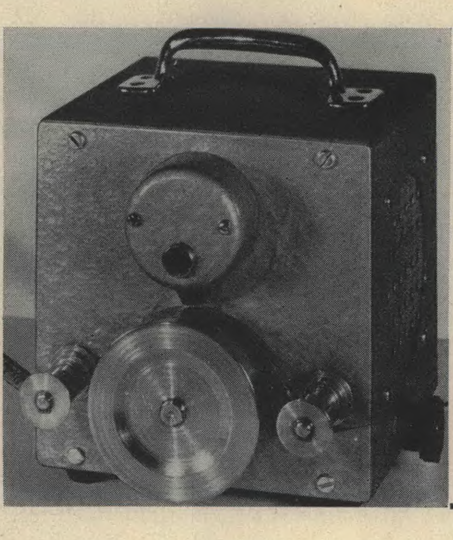
phototube unit, shows the direction and amount of error between the two films. Whenever there is a sync error of ¼ frame or more in either direction, a buzzer sounds, calling the projectionist's attention to the condition, and continues to buzz until the error is corrected. Correcting sync error is as simple as correcting a framing error—simply by turning a knob on the control until until the out-of-sync condition is corrected. The cost of this equipment is in the neighborhood of $500.00. Wherever either of the Polaroid devices have been installed, and the projectionist fully instructed in their use, 3-D projection has been flawless.

In the matter of photography of 3-D pictures, it is admitted that the producers and particularly their camera crews lacked a great deal of technical knowledge relating to stereoscopy when the first 3-D feature films were undertaken in Hollywood. "Bwana Devil," the first Hollywood 3-D production admittedly suffered from a number of technical errors. However, despite the technical shortcomings of this picture, it has a great deal on the credit side of the ledger. In the first place, it



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started the 3-D ball rolling in Hollywood. If it hadn't been for "Bwana Devil," stereoscopic theatrical films might still be in the experimental stage —as indeed they were for a great many years, prior to the advent of the stereo film showings at the Festival of Britain and the subsequent production of "Bwana Devil." And secondly, the technical errors of "Bwana Devil" eventually became the research ground for technicians in the major studios who were immediately set to work developing new 3-D cameras on orders from the "front office" following the tremendous box-office success of "Bwana." That the cameras used in filming this picture were basically correct for 3-D was later proven when they were leased to several major studios which subsequently photographed technically improved 3-D feature films with them. In every case, each studio was at the time building its own 3-D camera, based on the individual ideas of its technical and engineering staffs.

There followed, then, an hectic era of 3-D film production which saw every major studio save one enter into an extensive program of 3-D film making. At this time, CinemaScope was getting its baptism in the production of "The Robe" at 20th Century-Fox studios, and Cinerama already was being exhibited publicly in New York and Hollywood. But except at Fox, 3-D films were the big thing among the other majors.

With very few exceptions, the 3-D releases that followed from major studios were technically perfect photographically. Yet by the time they reached the theatres on their release schedules, apathy toward 3-D on part of the public had set in, and exhibitors were taking a panicky view of stereo. And with both the exhibitor and the public showing lessened enthusiasm for 3-D—there was chain reaction clear back to Hollywood.

So what is the picture today? Exhibitor feeling toward 3-D is varied and seldom enthusiastic. And when exhibitors are reluctant to buy, the studios are naturally reluctant to make 3-D films. But a few continue to have faith in three-dimension motion pictures. They believe that good 3-D pictures—with good stories and good casts, and not relying on the 3-D novelty to sell them—will continue to do good business. And there are a couple of recent 3-D releases that prove this, one of them being Wayne-Fellows' "Hondo," about which more later.

As for the Hollywood major studios, here is the present picture of 3-D activity:

Columbia—This studio and its contributing independents have made ten 3-D pictures to date — four still unreleased, including its big color production, "Miss Sadie Thompson." Aside from one 3-D picture currently in production by an independent for Columbia release, studio has no future plans for 3-D. It is likely that it will continue to make other stereo films; it depends upon the stories, which will be considered for 3-D as they come up for discussion. This studio has established the policy that, where possible, it will furnish any of its productions in any format except Cinerama, according to one Columbia executive.

Columbia has two 3-D camera units, and the components for putting a third into operation within 24 hours notice. Cameramen who have photographed the studio's 3-D productions to date are Charles "Buddy" Lawton, Jr., ASC; Lester White, ASC; and Henry Freulich, ASC.

Twentieth Century-Fox—This studio has made only one picture, "Inferno," in three-dimension. Since then, the studio has made a firm decision to make all future films in CinemaScope. Production executives say no further 3-D productions are planned at this time.

Metro-Goldwyn-Mayer—There are no stereo films in production at this studio at present, and none are in the planning stage. However, this does not mean 3-D has been shelved by MGM. Studio has assumed position of watchful waiting—watching boxoffice results of its most pretentious combination 2-D, 3-D "Kiss Me Kate," which, the studio reports, is doing phenominal business in the 3-D format everywhere. Right now they are pushing "Kiss Me Kate" in 3-D.

As for future, studio will analyze each story as it comes up for consideration and decide at that time in what medium it is to be shot. Company has made only two 3-D pictures todate—"Kate" and "Arena." Charles Rosher, ASC, shot the "Kate" picture in color; Paul Vogel, ASC, filmed "Arena."

The studio has three 3-D camera units.

Paramount—Six three-dimension pictures have been turned out by this studio to date, including those by Pine and Thomas, Paramount affiliate. No 3-D pictures are being shot at this time and none are in the planning stage. The studio built only one 3-D camera.

R.K.O.-Radio—A total of five three-dimension pictures has been made by this studio—three as yet unreleased. The first was "Devil's Canyon," filmed with a rented Natural Vision stereo camera. The other four productions were filmed with RKO's own 3-D cameras. Information on the number of 3-D cameras which the studio has was unavailable at the time of inquiry. How-

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ever, it was stated that although no 3-D pictures were in the planning stage at present, more are expected and the studio is ready to go with additional 3-D photography whenever it gets signal from the production department.

Of the five 3-D-ers made to date, William Snyder, ASC, shot 3; Nick Musuraca, ASC, one; and Harry Wild, ASC, one.

Universal-International — This studio is one of the stalwarts in 3-D's corner. Although it has produced only four stereo films to date, it has others currently in the planning stage for which starting dates have not been set. All Universal's 3-D pictures have been exceptionally good technically. Credit for this is due the extensive research done by the studio's technicians and engineering staff before starting production on its first stereo film. Unlike some studios, U-I did not plunge immediately into 3-D but studied the stereoscopy technique carefully, made sure its cameras were right. The studio has built five 3-D cameras to date.

Its first 3-D film was "It Came From Outer Space," followed by "Wings of the Hawk," "The Glass Webb," and "Black Lagoon," the latter consisting substantially of underwater photography in 3-D. Cameramen who have shot 3-D

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at this studio include Cliff Stine, ASC; Maury Gertsman, ASC; and William Snyder, ASC.

Warner Brothers—This studio is second only to Columbia in the number of 3-D films made to date—seven in all. Despite the phenominal success of its latest, "Hondo," the studio has no plans at present for future production of 3-D films. This is probably because it has recently come into the CinemaScope fold, and has announced that all W-B films in future will be made in this medium.

The studio assembled five 3-D camera units (See Fig. 2), and judging from the high technical quality of the photography of "Hondo," it undoubtedly has the finest stereo camera equipment of any studio at this time. The latter picture was photographed jointly by Robert Burks, ASC, and Archie Stout, ASC. Other cinematographers who have filmed 3-D pictures for Warners include Edward DuPar, ASC, Wilfrid Cline, ASC, and Peverell Marley, ASC, who photographed "House of Wax," the studio's initial 3-D production.

It would appear from the above survey report that while 3-D production in Hollywood is more or less stalemated at present, it is far from dead. It is the consensus of many professional film reviewers that "Hondo" will do much to put 3-D back on its feet again. In the writer's opinion, at least, "Hondo" is the best photographed 3-D film to come out of Hollywood. Besides being an excellent picture in all other departments, here is a 3-D-er you can put on your Pola-viewers for, and sit back and watch the picture to the final fadeout without being conscious of the viewing glasses. Another recent 3-D release having similar quality is Universal's "The Glass Webb."

In the meantime, while Hollywood's studios are marking time more or less on 3-D, the medium is receiving considerable attention from other quarters, particularly the industrial film field. Last month the Raphael G. Wolff studios in Hollywood demonstrated its initial promotional 3-D film photographed in 16mm Kodachrome with a stereo unit utilizing Maurer cameras. The demonstration, made before members of the Los Angeles Advertising Club, promises a surge of activity in 3-D industrial, training and educational film production in the very near future.

In addition to the faults mentioned earlier, which contributed to the slacking off in enthusiasm for 3-D feature films, there is the added factor of the subsequent development and use of still other screen formats — namely wide-screen and ultra-wide-screen CinemaScope. These developments cut into the strides that were being made earlier by 3-D and in many quarters they continue to hold the spotlight.

It is safe to say that 3-D is here to stay, but probably will be employed only for certain productions for which the medium is especially suited. Like "Hondo," "The Glass Webb," and "Kiss Me Kate."

NATURAL VISION

(Continued from Page 590)

horizontal separation of the vertical lines "American," and the vertical separation of the horizontal lines "Chinese." Because stereopsis is present only in the horizontal plane and not in the vertical, vertical fusion movements are poorly developed, and to introduce them causes eye fatigue.

Another question that confronted us was what percentage of the people have binocular vision? Still another question—what percentage will see a stereo picture as a flat picture? And also, what percentage of people might be expected to be actually disturbed or distressed by the stereo picture? Would stereo do harm to any viewer? The answers to these eye questions could occupy a long chapter, and I have only space here to give a summary. Perhaps only about 75% of the population have so-called normal binocular vision; but the percentage of viewers who would be aware of the stereo effect and benefit from it might bring the total percentage to well over ninety percent.

To the viewer with no binocular vision, the stereo picture becomes merely a flat picture.

We discovered also in our research that a certain percentage of people will be uncomfortable in viewing a stereo picture. This group is percentage-wise small—perhaps less than five percent. The ocular discomfort may be caused in the majority of cases by eye defects. A book could be written on this phase alone, but in summary these eye defects could be described as aberrations in the focusing apparatus, abnormalities in fusional functions, imbalance between the eyes in refraction, image size, color balance, and, of course, pathological

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conditions. Suffice to say that if many of these eye abnormalities were corrected, the viewer could be comfortable. If realization and correction of these defects are brought about through stereo viewing, then the stereo picture performs a great service to this group of people. Because of the stimulation to fusional movements and the development of amplitudes, the stereo picture actually becomes a therapeutic tool, and the viewer is likely to become visually relaxed and more comfortable at the end of the picture than when he entered the theatre, and he may be able to carry these visual benefits to other visual tasks.

And now that we have covered the camera, and to some extent the viewer, we are now ready to discuss the Natural Vision Stereo System. As stated previously, in Natural Vision several very important things are established. The interaxial (or interocular) is fixed and always constant. The film planes of the two cameras are fixed and matched to each other exactly. The camera shutter mechanisms are matched and in absolute synchronization with each other. The lenses are matched, as are the mirrors and their posts. The synchronized focusing of the two cameras can be changed during the taking of the scene, as can the converging and diverging of the visual axis. *(Cont. on p. 614)*

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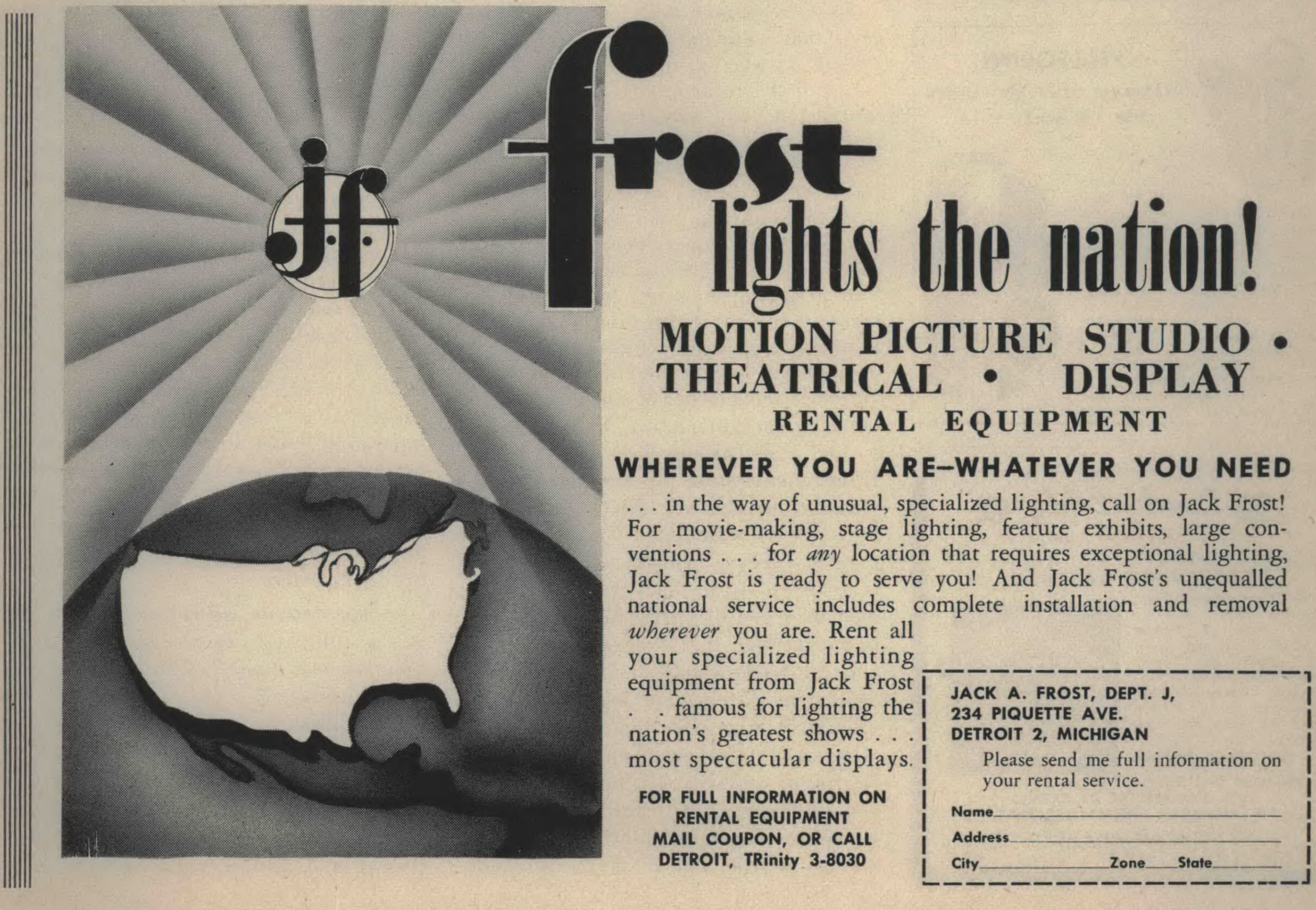
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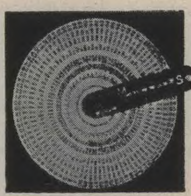

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The film plane apertures being in absolute alignment to each other, and the interaxial being constant, the variables in the system become the location of the plane of convergence, the distance of this plane to the camera, to the foreground and to the background, and the uses of the different focal length lenses.

When the two optical axes of the cameras are directed to a specific object in a scene, these axes cross each other and form what we call the convergence X. The closer the point of convergence to the camera, the greater the angle of the X; and the further the converging point from the camera, the less is the angle of the X. The arms of the X represent the foreground and background separations, and the further from the center of the X, or the point of convergence, the greater the separation; and conversely, the closer the foreground and background to the center of convergence, the less the separation. It can therefore be readily seen that the degree of foreground and background separations is quickly and easily determined for each situation. This concept of the convergence X representing the foreground and background separations was used in computing the limitations of these separations. One degree of separation was established as the limit of separation of objects to be seen by the central retinae for sustained vision. Foreground and background objects that were not to be centrally sustained, or were projected on peripheral zones of the retinae, could be separated more, but this was dependent on the type of object, the degree of focus, the color, the light, and, of course, the interest of the object to the story, etc.

In the separation charts which we prepared for the cameramen, we indicated the foreground and background limitation in terms of sustained viewing and viewing for short durations only. Here I might say a word about the foreground and background separation. The vergence movements of the eyes for distance or motion picture screen viewing is for practical purposes about equal. If accommodation is stimulated, as in viewing foreground objects, then convergence is stimulated and is greater than divergence; and if accommodation is relaxed, as in background viewing, then divergence is stimulated. However, in perspective the foreground is larger and the background smaller, so that in comparing foreground and background objects, it is possible that greater separation of certain background objects can be fused, whereas a comparable foreground larger object could not be fused. However, there are situations where the reverse is true, due to the accommodative factor induced in fusing foreground objects. And this difference in foreground and background objects is further influenced by the field size with the different focal length lenses.

SEPARATION CHART

Plane of Convergence	*Zones of sustained viewing into foreground & background*
7 feet	1½ feet
10 feet	2½ feet
15 feet	4 feet
20 feet	6 feet

With the proper selection of lenses, it is possible to so adjust the convergence point that the foreground and background separations are kept within tolerances. That is, when taking the establishing scene with a 40mm or 50mm lens, with the converging plane at, say, 20 feet, this converging distance can be maintained for the medium shot by using the 75mm lens, and the closeup by using the 100mm lens converged at near 20 feet. Not only are the separations controlled by this technique, but also the perspectives are correct, and stereo distortion, associated with sustained fusion of widely separated lines, is avoided.

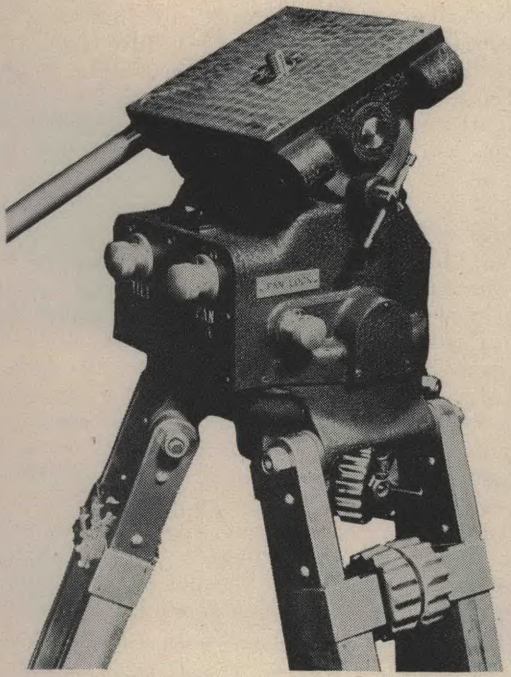
The variable convergence control has another important function besides separation and distortion control, for it eliminates the concept of the stereo window. In Natural Vision, stereo is as dynamic as is the moving picture itself. The screen becomes space, so to speak, and the audience becomes part of the picture. By changing convergence with the action and interest of the scene, that scene becomes part of the theatre, objects become spacial in feeling, and there is movement of planes as well as of action.

Generally speaking, the convergence plane is at the plane of greatest interest and action, and where the audience would sustain their vision. This is especially true with the longer focal length lenses. With the 40mm and 50mm lenses, it is from the stereo and the separation point of view advantageous to place the converging plane beyond the plane of interest. This tends to bring the background forward, to lessen background separations and avoid miniature perspective.

FOREGROUND LIMITATION CHART
(40 and 50mm Lenses)

Convergence Plane	*Foreground Limit*
Infinity	25 feet
50 feet	20 feet
30 feet	15 feet
20 feet	12 feet
15 feet	10 feet

It goes without saying that the processing and printing of a stereo picture



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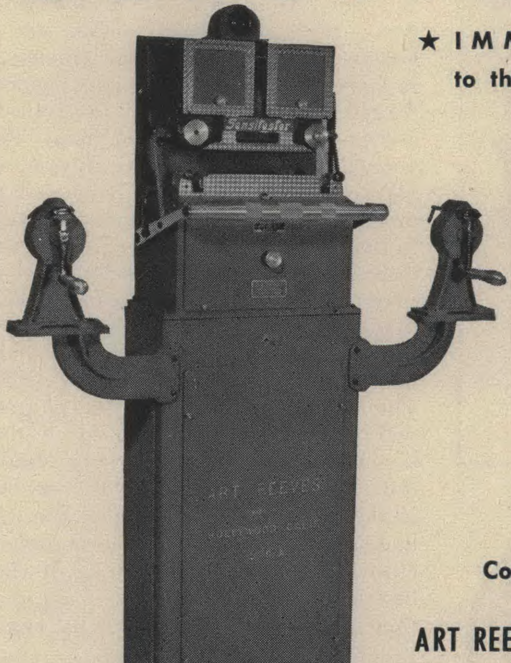
must be as meticulous in every detail as the photography; rock-steady registered printing is a must, and the two prints must be matched in every detail.

The editing techniques must also be of precision quality so that the frame-for-frame synchronization and matching are maintained.

And lastly, if the projection of the stereo picture is not meticulously carried out, the quality of the picture will suffer. Good solid, perfectly-matched projectors and lenses, and perfect image alignment are necessary to maintain this quality. The synchronization must be positive and frame-for-frame. The light from each projector must be matched and maintained.

The reflective type screen must be of the highest quality, and the projection polaroid filters carefully protected against dust and heat. The latter must be in precise alignment with the Polaroid viewing glasses of the audience. As can be seen, there are many links in the chain from the taking of the Natural Vision picture to its projection in the theatre, and the chain is only as strong as its weakest link.

In conclusion, I might state that the dream of Milton Gunzburg of making motion picture photography real has come true through Natural Vision. To date Natural Vision has completed nine



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feature-length motion pictures. When they have been properly projected, each has fulfilled our requirement of being visually comfortable. Each successive picture shows progress in technique and stereo quality, and with each new picture we are more certain of the many advantages of what we and others have come to know as the Natural Vision system.

All nine pictures have been produced without imposing serious limitations upon the producer, the director, the actors and the technicians—more or less as normal 2-D pictures have been photographed for years—and the Natural Vision cameras have operated with the same facility as a 2-D single camera. The cameras have always been ready and have not held up production. Hardly a scene had to be reshot from a stereo point of view.

Although the past literature on stereo and the current thinking of many experts deriving their knowledge out of this past literature has been volubly against "variable convergence" such as is used in Natural Vision, and volubly for the former "variable interocular," the proof after nine feature length motion pictures is "in the pudding," and it is now possible for the motion picture industry to compare, scene by scene, pictures shot in both systems. My brother and I are pleased to see that whenever such comparisons are made the major studios move more and more toward acceptance and appreciation of the system we have introduced.

Although in the beginning of our development we were convinced that we had made a unique and inventive contribution to the art of stereo photography. The United States Patent Office has only recently concluded otherwise. It appears at this late date that there is little in optics that is patentable, and much indeed that is now in public domain, including our so-called Natural Vision system, which is accordingly open and available to all those who wish to use it. It is in the spirit of disclosing what we believe are the essential truths of our system that this article is written. We hope that others who make stereo motion pictures may profit by our knowledge and experience and thereby make available for the eyes of the public better and ever-more exciting stereo films.

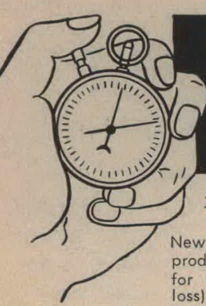
DELTA KAPPA ALPHA CINEMA FRATERNITY

(Continued from Page 595)

Members who have accepted the fraternity's admiration and gratitude for their work in the advancement of film in America. Included are such distinguished names as cinematographer and Academy Award winner Arthur Miller ASC; the late Gregg Toland, one of Hollywood's most renowned cinematographers who was also an Academy Award winner; producer Jesse Lasky, and producer-directors William Perlberg, Stanley Kramer, John Huston, and Slavko Vorkapich. These men and the others on the list have and do attend functions staged by the group. Very often they make their wisdom and experience available at informal D.K.A. dinner talks. The sight of top-level professional men and film students together in common interests is a gratifying one. The whole atmosphere is one of goodwill and mutual interest. Once these honorary members have become used to the challenges offered by the students in their probing discussion of the filmmaker's work, they find the experience enjoyable as well as interesting. It seems that in the academic environment, questions that would elsewhere be embarrassing are right in keeping.

The U.S.C. chapter is now preparing the first in a series of exhibits designed to create greater interest in film among high school and college students. These exhibits will first appear at S.C.'s Department of Cinema and later will be circulated on a short loan basis. Within a few weeks a very extensive exhibit on the technique and style of animation will appear. Further evidence of the Fraternity's standing in the Hollywood film industry is the fact that such studios as Disney, U.P.A., Warner Bros., and Walter Lantz all contributed freely and extensively to this exhibit.

Subsequent shows will deal with the fields of cinematography as a science and an art, art direction, and the make-up man. There has been no limit set for this series of exhibits, and the prospects are that it will continue as long as there are people to view it; and this makes Delta Kapa Alpha unique in another way. Fitting into an institution designed specifically for education, the group is embarked on a separate campaign for instruction of those not regularly pursuing this education in film at the parent institution. All the planning and work is the sole responsibility of the members. Because of their past success they generally receive one hundred per cent cooperation from the Universities themselves. At U.S.C. plans are now under way for a permanent four-panel wall mural on the history of the film, and for publication of a quarterly magazine dealing with film production and criticism.



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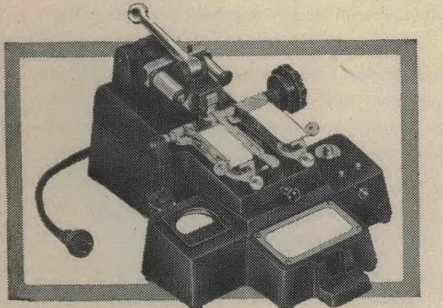

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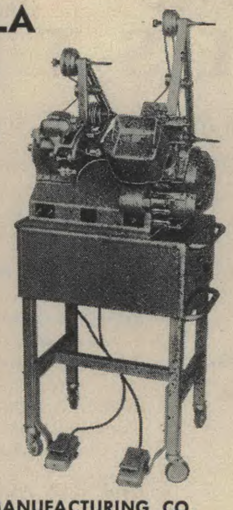

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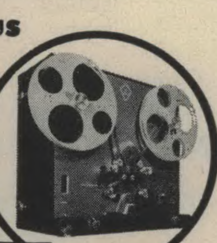

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Delta Kappa Alpha is not a new organization. It was founded in the middle 1930's. A strong pledge program, in which prospective members are required to show their interest by working on Fraternity projects, has swelled the ranks. As each new program of activities meets with success and recognition the Fraternity's position in the professional as well as the academic environment is strengthened.

D.K.A. is unique in another way too: as far as we can tell it is the only fraternity that regularly accepts female *members* who pass the requirements for acceptance.

ANIMATED MOVIES

(Continued from Page 601)

Bolex. Long before filming started, there were long hours spent in planning the production, writing the script, designing characters and experimenting with various props. Each scene was sketched out roughly in story-board fashion. And when Kallenberg was satisfied he had what he wanted, he picked up his shears and began to cut out his characters, props, and background figures.

Both of the completed films have been comedies, for Kallenberg has a knack in timing that invariably builds for laughs. So remarkable was his achievement in making "Yowie" considered by members of the Long Beach Cinema Club, of which he is a member, they awarded him the Val Pope Memorial Award for distinguished accomplishment.

What are his future plans? He has been reading Grimm's Fairy Tales, and the big dragon has intrigued him. "I've got to get that dragon before my camera," he says. He hasn't worked out the story in detail as yet, but it will probably be based on the highlights of several of the more colorful Grimm stories. This production should surpass the others which have preceded it for many reasons. First, Kallenberg now has gained considerable experience, knows what will work and what won't with his system. Second, he has a number of new ideas he hopes to work into his coming production; for one thing he expects to make greater use of pastels. Mrs. Kallenberg, who is an artist, will create the fairytale backgrounds. And last but not least, Kallenberg has some ideas for giving his scenes depth by building the backgrounds in layers at different levels. This may complicate the lighting problem at first, but he'll lick this just as he has the scores of other problems which he has encountered.

Kallenberg doesn't promise a preview of this new film for at least a year. Time means little when the time consumed is lots of fun and the effort fully worth it.

ELECTRONIC RECORDING OF PICTURES ON TAPE

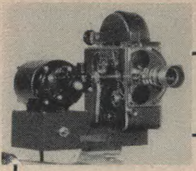
(Continued from Page 596)

In motion picture production the VTR system works as follows: The instrument for recording the picture is a small, very compact TV camera, similar to the closed-circuit cameras presently in use in industry. This is wired directly to the tape recording unit, which can be located elsewhere, i.e., off stage, or in another room — same as is most sound recording apparatus in the studios today. The magnetic tape used in the recorders travels at a speed of 30 feet per second. A monitor screen enables the cameraman to see the scene exactly as it is being picked up by the recording camera — the same as with standard television cameras. Set lighting procedure would remain pretty much the same as it is today, except that light volume would be reduced considerably because of the extreme sensitivity of the pickup tube.

Cost of a taped black-and-white recording of a TV program was estimated to be 80 to 90 percent less than a kinescope and, for color, 90 to 95 percent less. A 30 minute TV program in black-and-white could be taped for distribution for less than $15 per copy. Similar economies will result when VTR is applied to motion picture production, say RCA engineers.

W. R. Wilkerson, publisher of the Hollywood Reporter, in commenting on the application of RCA's video tape recording system to motion pictures, remarked that a scientist had pointed out the tremendous ramifications and great savings which the system held for the industry. "The day will soon be at hand, in the use of tape," he said, "when a motion picture exhibitor can press a button, start his projectors, run his entire entertainment, and re-run it

(Continued on Page 618)



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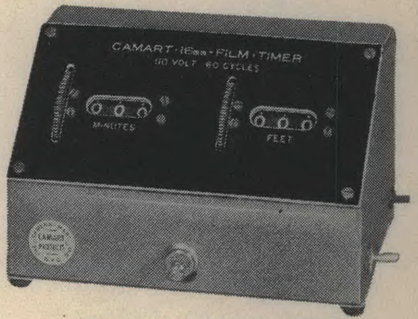

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Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 8, 1919, The American Society of Cinematographers is composed of the leading directors of photography in the Hollywood motion picture studios. Its membership also includes non-resident cinematographers and cinematographers in foreign lands. Membership is by invitation only.

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COLUMBIA

- Henry Freulich, "The Miami Story," with Barry Sullivan. Fred F. Sears, director.
- Charles Lawton, "The Wood Hawk," (Technicolor) with Robert Francis, Donna Reed. Phil Karlson, director.

METRO-GOLDWYN-MAYER

- George Folsey, "A Bride for Seven Brothers," (CinemaScope, Eastman Color) with Jane Powell, Howard Keel. Stanley Donen, director.

PARAMOUNT

- Loyal Griggs, "White Christmas," (Technicolor) with Bing Crosby. Michael Curtiz, director.
- Charles Lang, "Sabrina Fair," (Wide-screen) with Humphrey Bogart, Audrey Hepburn. Billy Wilder, producer-director.
- Ernst Laszlo, "About Mrs. Leslie," (Hal Wallis Prod.) with Shirley Booth, Robert Ryan. Daniel Mann, director.
- Lionel Lindon, "Legend of the Inca," (Eastman Color, Wide-screen) with Charlton Heston, Robert Young. Jerry Hopper, director.
- Daniel Fapp, "Living It Up," (Technicolor, Wide-screen) with Dean Martin, Jerry Lewis. Norman Taurog, director.
- Robert Burks, "Rear Window," (Wide-screen, Technicolor) with James Stewart. Alfred Hitchcock, producer-director.
- Lionel Lindon, "Conquest of Space," (Color, Wide-screen) with Eric Fleming, William Redfield. Byron Haskin, director.
- Thomas Tutwiler, "The Bridges of Toko Ri," (Perlberg-Seaton Prod.; color) with Wm. Holden and Robert Strauss. Mark Robson, director.

REPUBLIC

- Harry Stradling, "Johnny Guitar," (Trucolor) with Joan Crawford, Sterling Hayden. Nick Ray, producer-director.
- Jack Russell, "The Outcast," with Dorothy McGuire, Stephen McNally. William A. Seiter, director.

R.K.O.

- Harry Wild, "The Big Rainbow," (Technicolor) with Jane Russell. John Sturges, director.

20th CENTURY-FOX

- Lucien Ballard, "New Faces," (National Pictures Corp.; CinemaScope, Color Corp. of America) with Ronny Graham, Eartha Kitt. Harry Horner, director.
- Lloyd Ahern, "Princess of the Nile," (Panoramic Prods.; Technicolor) with Debra Paget, Jeffrey Hunter. Harmon Jones, director.
- John Seitz, "The Kid from Outer Space," (Panoramic Prods.) with Charles Coburn, Spring Byington. Oscar Rudolph, director.

UNIVERSAL-INTERNATIONAL

- Maury Gertsman, "Tanganyika," (Technicolor, Wide-screen) with Van Heflin, Ruth Roman. Andre de Toth, director.
- George Robinson, "Echo Canyon," (Technicolor, Wide-screen) with Joel McCrea, Mari Blanchard. Jesse Hibbs, director.
- Cliff Stine, "Fireman Save My Child," (Wide-screen) with Hugh O'Brian, Buddy Hackett. Leslie Goodwins, director.
- Carl Guthrie, "Playgirl," with Shelley Winters, Colleen Miller. Joseph Pevney, director.

WARNER BROS.

- Wilfred Cline, "Lucky Me," (Warner-Color, CinemaScope) with Doris Day, Robert Cummings. Jack Donohue, director.
- Archie Stout, "The High and the Mighty," (Wayne-Fellows Prods.; Warner-Color, CinemaScope) with John Wayne, Claire Trevor. William A. Wellman, director.
- Edward Du Par, "Ring of Fear," (Wayne-Fellows Prods.; WarnerColor, CinemaScope) with Clyde Beatty, Micky Spillane. James Edward Grant, director.

INDEPENDENT

- Stanley Cortez, "Broncho Apache," (Hecht-Lancaster Prods.; Technicolor, Wide-screen) with Burt Lancaster, Jean Peters. Robert Aldrich, director.
- Franz Planer, "The Long Wait," (Parklane Prods.; Wide-screen) with Anthony Quinn, Charles Coburn. Victor Saville, director.
- Lester White, "Adios, My Texas," (Edward Small Prods.; Wide-screen, Color) with George Montgomery. Ray Nazarro, director.
- John Alton, "Witness to Murder," (C. Erskine Pics.; Wide-screen) with Barbara Sanders, George Sanders. Roy Rowland, director.

TELEVISION

(The following directors of photography were active last month in photographing films for television, or were on contract to direct the photography of television films for the producers named.)

- Joseph Biroc, "Readers Digest" series for Alpha Television, Inc.
- Norbert Brodine, "Letters To Loretta" series for Lewislor Enterprises, Inc.
- Edward Colman, "Dragnet," Mark VII Prods.
- Robert DeGrasse, "Make Room For Daddy," D.P.I. and Marterto Prods., Inc.;
- George Diskant, "Four Star Playhouse," Four Star Prods.
- Henry Freulich, "Ford Theatre" for Screen Gems.
- Karl Freund, "I Love Lucy" and "Our Miss Brooks," for Desilu Prods.
- Fred Gately, "Big Town," Gross-Krasne Productions.
- Burnett Guffey, "Ford Theatre," for Screen Gems.
- Russell Harlan, "Playhouse of Stars" for Meridian Productions.
- Benjamine H. Kline, "Fireside Theatre," Frank Wisbar Productions.
- Jack MacKenzie, "The Hank McCune Show" for Video Pictures, Inc.
- William Mellor, "Adventures of Ozzie and Harriett," Stage 5 Productions.
- Ernest Miller, "Hopalong Cassidy," William Boyd Productions.
- Virgil Miller, "You Bet Your Life," (the Groucho Marx Show), Filmcraft Productions.
- Hal Mohr, "The Joan Davis Show," Joan Davis Productions.
- Nick Musuraca, "I Love Lucy," for Desilu Productions.
- Kenneth Peach, "Ramar of the Jungle," Arrow Productions.
- Robert Pittack, "Cavalcade of America," Jack Chertok Productions.
- Mack Stengler, "Life With Elizabeth," Snader Telescription Corporation.
- Harold Stine, "Lassie" series for Robert Maxwell Associates.
- Walter Strenge, "My Little Margie," Roland Reed Productions.
- Phillip Tannura, "The Burns and Allen Show," McCadden Corporation.
- Stuart Thompson, "Your Jeweler's Showcase," Sovereign Productions.
- Gilbert Warrenton, "Chevron Theatre," Revue Productions.

ELECTRONIC RECORDING

(Continued from Page 617)

all through the day and the night with little or no help in the projection room. The tape will rewind itself and through that process slice millions each year in projection booth salaries alone."

Perhaps he could have speculated further and envisioned the director of photography in the era of VTR motion picture recording, seated off the set in a glassed-in booth along with the director, and operating lights and camera by pushbutton, tilting and panning the camera, changing focus, yes—even controlling the camera crane and dolly. A monitor screen before him would show exactly what the camera was picking up.

INDUSTRY NEWS

Byron Establishes Scholarships—Two new scholarships at Lehigh University have been established through a gift of $2500 from Byron, Inc., Washington, D. C. motion picture studios and film laboratory. The awards, given in recognition of the need of the motion picture industry for trained engineers, are part of a long-range program of the Society of Motion Picture and Television Engineers for the encouragement of industry-wide training. With the scholarships go a student membership in the SMPTE.

Selections are made by the University scholarship committee on basis of character, personality and high scholastic achievement and financial need. Preference is given to students enrolled in chemistry, chemical engineering, mechanical engineering, and engineering physics.

Ansco Promotes—Paul Christman of Ansco'sNew York office has been promoted to the company's professional motion picture film department. His headquarters will be in the Chrysler Building from where he will service producers and laboratories in the New York area with Ansco film and related products.

Old Movies Restored—Early motion pictures reproduced on durable, modern film were screened at the Academy of Motion Picture Arts and Sciences in Hollywood last month. The event marked successful completion of experiments to convert the paper prints of motion pictures, made in the early days of the film industry, to 16mm celluloid, thus making available once again the historic, significant, and interesting movies produced between 1894 and 1912.

When the first commercial motion pictures were exhibited in 1894, there was no provision for copyright protection, but there was a provision for the registration of copyright claims for photographs. This led a number of film producers to get copyright protection on their motion picture films by making paper contact prints from the original 35mm negative and depositing them in the government Copyright Office in the Library of Congress. This practice was followed until 1812, when the copyright law was amended to provide for claims for motion pictures as such.

For more than fifty years these paper prints have been stored in the Library. For the past six years experiments have been under way to determine a practical means of reconverting the paper prints to film. With the assistance of the Academy, Primrose Productions of Los Angeles has produced positive film prints from the old paper prints. As a result the Academy is launching a program to reconvert more of the prints to film as fast as funds for the purpose are made available.

Filmeffects of Hollywood also has undertaken some experiments with the prints with the object of making some of the old Keystone comedies available for television.

Many of the restored prints are of films of historical importance, such as troop movements during the Spanish-American war; of President McKinley making a speech prior to his assassination; and of the ill-fated steamship Titanic, etc. Included also are a number of early-day comedies.

3-D Handbook—Polaroid Corporation, New York is distributing free to qualified companies and personnel in the motion picture industry, a new 14-page handbook presenting a complete step-by-step guide for the projection of 3-D films. The booklet also describes in detail the proper use of the new synchronization and monitoring equipment that Polaroid is making available nationally as part of its recently announced Technical Service Program.

Kodak Earnings—Third-quarter sales and net earnings of Eastman Kodak Company were higher this year than in the same quarter of 1952. Outstanding factor in sales and earnings results, according to company, has been continuing high demand for photographic products. Sales of photographic items to government increased somewhat in the quarter over a year ago, but totals for the three quarters were down, owing to earlier declines. An important factor in company's professional motion picture film sales is the active shift by the industry to more color. Television demand for 16mm film continues good.

Gilbert Warrenton, ASC, in addition to directing the photography of Revue Productions' "Chevron Theatre" TV film series, also has photographed "Pride Of The Family," Meet Mr. McNutley," and "City Detective" for same producer.

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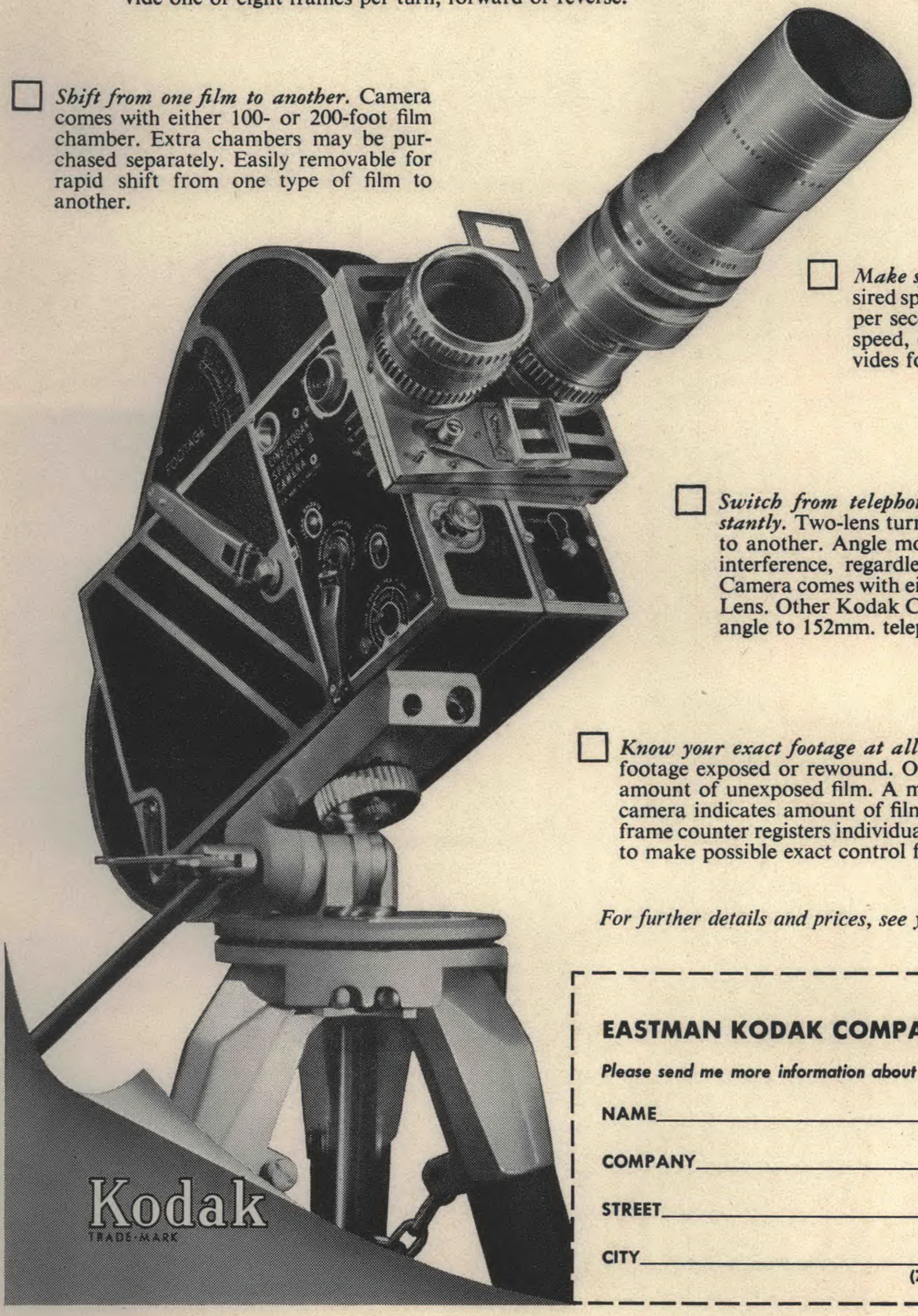

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